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Chapter VI
Protection of the atmosphere

Addendum

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C. Text of the draft guidelines on the protection of the atmosphere, together with the preamble, adopted by the Commission on first reading

1. Text of the draft guidelines, together with preamble

1. The text of the draft guidelines on the protection of the atmosphere, together with preamble, adopted by the Commission on first reading is reproduced below.

Preamble

Acknowledging that the atmosphere is essential for sustaining life on Earth, human health and welfare, and aquatic and terrestrial ecosystems,

Bearing in mind that the transport and dispersion of polluting and degrading substances occur within the atmosphere,

Noting the close interaction between the atmosphere and the oceans,

Recognizing therefore that the protection of the atmosphere from atmospheric pollution and atmospheric degradation is a pressing concern of the international community as a whole,

Aware of the special situation and needs of developing countries,

Aware also, in particular, of the special situation of low-lying coastal areas and small island developing States due to sea-level rise,

Noting that the interests of future generations of humankind in the long-term conservation of the quality of the atmosphere should be fully taken into account,

Recalling that the present draft guidelines are not to interfere with relevant political negotiations, including those on climate change, ozone depletion, and long-range transboundary air pollution, and that they also neither seek to "fill" gaps in treaty regimes nor impose on current treaty regimes legal rules or legal principles not already contained therein,

Guideline 1
Use of terms

For the purposes of the present draft guidelines,

(a) "Atmosphere" means the envelope of gases surrounding the Earth;

(b) "Atmospheric pollution" means the introduction or release by humans, directly or indirectly, into the atmosphere of substances contributing to deleterious effects extending beyond the State of origin of such a nature as to endanger human life and health and the Earth's natural environment;

(c) "Atmospheric degradation" means the alteration by humans, directly or indirectly, of atmospheric conditions having significant deleterious effects of such a nature as to endanger human life and health and the Earth's natural environment.

Guideline 2
Scope of the guidelines

1. The present draft guidelines concern the protection of the atmosphere from atmospheric pollution and atmospheric degradation.

2. The present draft guidelines do not deal with, but are without prejudice to, questions concerning the polluter-pays principle, the precautionary principle, common but differentiated responsibilities, the liability of States and their nationals, and the transfer of funds and technology to developing countries, including intellectual property rights.

3. The present draft guidelines do not deal with specific substances, such as black carbon, tropospheric ozone and other dual-impact substances, which are the subject of negotiations among States.

4. Nothing in the present draft guidelines affects the status of airspace under international law nor questions related to outer space, including its delimitation.

Guideline 3
Obligation to protect the atmosphere

States have the obligation to protect the atmosphere by exercising due diligence in taking appropriate measures, in accordance with applicable rules of international law, to prevent, reduce or control atmospheric pollution and atmospheric degradation.

Guideline 4
Environmental impact assessment

States have the obligation to ensure that an environmental impact assessment is undertaken of proposed activities under their jurisdiction or control which are likely to cause significant adverse impact on the atmosphere in terms of atmospheric pollution or atmospheric degradation.

Guideline 5
Sustainable utilization of the atmosphere

1. Given that the atmosphere is a natural resource with a limited assimilation capacity, its utilization should be undertaken in a sustainable manner.

2. Sustainable utilization of the atmosphere includes the need to reconcile economic development with protection of the atmosphere.

Guideline 6
Equitable and reasonable utilization of the atmosphere

The atmosphere should be utilized in an equitable and reasonable manner, taking into account the interests of present and future generations.

Guideline 7
Intentional large-scale modification of the atmosphere

Activities aimed at intentional large-scale modification of the atmosphere should be conducted with prudence and caution, subject to any applicable rules of international law.

Guideline 8 [5][1]
International cooperation

1. States have the obligation to cooperate, as appropriate, with each other and with relevant international organizations for the protection of the atmosphere from atmospheric pollution and atmospheric degradation.

2. States should cooperate in further enhancing scientific knowledge relating to the causes and impacts of atmospheric pollution and atmospheric degradation. Cooperation could include exchange of information and joint monitoring.

Guideline 9
Interrelationship among relevant rules

1. The rules of international law relating to the protection of the atmosphere and other relevant rules of international law, including, *inter alia*, the rules of international trade and investment law, of the law of the sea and of international human rights law, should, to the extent possible, be identified, interpreted and applied in order to give rise to a single set of compatible obligations, in line with the

[1] The draft guideline was renumbered during the sixty-eighth session of the Commission. The original number appears in square brackets.

principles of harmonization and systemic integration, and with a view to avoiding conflicts. This should be done in accordance with the relevant rules set forth in the Vienna Convention on the Law of Treaties of 1969, including articles 30 and 31, paragraph 3 (c), and the principles and rules of customary international law.

2. States should, to the extent possible, when developing new rules of international law relating to the protection of the atmosphere and other relevant rules of international law, endeavour to do so in a harmonious manner.

3. When applying paragraphs 1 and 2, special consideration should be given to persons and groups particularly vulnerable to atmospheric pollution and atmospheric degradation. Such groups may include, *inter alia*, indigenous peoples, people of the least developed countries and people of low-lying coastal areas and small island developing States affected by sea-level rise.

Guideline 10
Implementation

1. National implementation of obligations under international law relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation, including those referred to in the present draft guidelines, may take the form of legislative, administrative, judicial and other actions.

2. States should endeavour to give effect to the recommendations contained in the present draft guidelines.

Guideline 11
Compliance

1. States are required to abide with their obligations under international law relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation in good faith, including through compliance with the rules and procedures in the relevant agreements to which they are parties.

2. To achieve compliance, facilitative or enforcement procedures may be used, as appropriate, in accordance with the relevant agreements:

(a) facilitative procedures may include providing assistance to States, in cases of non-compliance, in a transparent, non-adversarial and non-punitive manner to ensure that the States concerned comply with their obligations under international law, taking into account their capabilities and special conditions;

(b) enforcement procedures may include issuing a caution of non-compliance, termination of rights and privileges under the relevant agreements, and other forms of enforcement measures.

Guideline 12
Dispute settlement

1. Disputes between States relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation are to be settled by peaceful means.

2. Given that such disputes may be of a fact-intensive and science-dependent character, due consideration should be given to the use of technical and scientific experts

2. Text of the draft guidelines, together with preamble, and commentaries thereto

2. The text of the draft guidelines, together with the preamble, and commentaries thereto, adopted by the Commission on first reading at its seventieth session is reproduced below.

Protection of the atmosphere

General commentary

The Commission recognizes the importance of being fully engaged with the international community's present-day needs. It is acknowledged that both the human and natural environments can be adversely affected by certain changes in the condition of the atmosphere mainly caused by the introduction of harmful substances, causing transboundary air pollution, ozone depletion, as well as changes in the atmospheric conditions leading to climate change. The Commission seeks, through the progressive development of international law and its codification, to provide guidelines that may assist the international community as it addresses critical questions relating to transboundary and global protection of the atmosphere. In doing so, the Commission does not desire to interfere with relevant political negotiations, including those on long-range transboundary air pollution, ozone depletion and climate change, seek to "fill" gaps in treaty regimes nor to impose on current treaty regimes legal rules or legal principles not already contained therein.

Preamble

Acknowledging that the atmosphere is essential for sustaining life on Earth, human health and welfare, and aquatic and terrestrial ecosystems,

Bearing in mind that the transport and dispersion of polluting and degrading substances occur within the atmosphere,

Noting the close interaction between the atmosphere and the oceans,

Recognizing therefore that the protection of the atmosphere from atmospheric pollution and atmospheric degradation is a pressing concern of the international community as a whole,

Aware of the special situation and needs of developing countries,

Aware also, in particular, of the special situation of low-lying coastal areas and small island developing States due to sea-level rise,

Noting that the interests of future generations of humankind in the long-term conservation of the quality of the atmosphere should be fully taken into account,

Recalling that the present draft guidelines are not to interfere with relevant political negotiations, including those on climate change, ozone depletion, and long-range transboundary air pollution, and that they also neither seek to "fill" gaps in treaty regimes nor impose on current treaty regimes legal rules or legal principles not already contained therein,

Commentary

(1) On previous occasions, preambles have been prepared once the Commission has concluded work on the particular topic.[2] In the present case, however, due to the way in

[2] In the past, the Commission has generally presented to the General Assembly an outcome of its work without a draft preamble, leaving its elaboration to States. However, there have also been precedents during which the Commission has prepared such preambles. This was the case, for instance, with respect to the two draft conventions on the elimination of future statelessness (1954), *Yearbook ... 1954*, vol. II, para. 25, and on the reduction of the future statelessness (1954), *Yearbook ... 1954*, vol. II, para. 25; the model rules on arbitral procedures (1958), *Yearbook ... 1958*, vol. II, para. 22 (the preamble reflected fundamental rules for an undertaking to arbitrate); the draft articles on the nationality of natural persons in relation to the succession of States (1999), *Yearbook ... 1999*, vol. II (Part Two), para. 47 (reproduced in General Assembly resolution 55/153, annex, of 12 December 2000); the draft articles on prevention of transboundary harm from hazardous activities (2001), *Yearbook ... 2001*, vol. II (Part Two) and corrigendum, para. 97 (reproduced in General Assembly resolution 62/68, annex, of 6 December 2007); the guiding principles applicable to unilateral declarations of States capable of creating legal obligations (2006), *Yearbook ... 2006*, vol. II (Part Two), para. 176; the draft principles on the allocation of loss in the case of transboundary harm

which the guidelines concerning the topic have evolved, with language from some guideline proposals being formulated as preambular text, a draft preamble has been elaborated during the drafting process. The Commission, for example, referred draft guideline 3 (on the common concern of humankind), as contained in the Special Rapporteur's second report,[3] to the Drafting Committee, for consideration in the context of a possible preamble. Should the case warrant, additional preambular paragraphs may be added as the work progresses in the future.

(2) The preamble seeks to provide a contextual framework for the draft guidelines. The first preambular paragraph is overarching in acknowledging the essential importance of the atmosphere for sustaining life on Earth, human health and welfare, and aquatic and terrestrial ecosystems. The atmosphere is the Earth's largest single and one of the most important natural resources. It was listed as a natural resource — along with mineral, energy and water resources — by the former Committee on Natural Resources of the Economic and Social Council,[4] as well as in the 1972 Declaration of the United Nations Conference on the Human Environment (hereinafter, "Stockholm Declaration")[5] and in the 1982 World Charter for Nature.[6] The atmosphere provides renewable "flow resources" essential for human, plant and animal survival on the planet, and it serves as a medium for transportation and communication. The atmosphere was long considered to be non-exhaustible and non-exclusive, since it was assumed that everyone could benefit from it without depriving others. That view is no longer held.[7] It must be borne in mind that the atmosphere is a limited resource with limited assimilation capacity.

(3) The second preambular paragraph addresses the functional aspect of the atmosphere as a medium through which transport and dispersion of polluting and degrading substances occur. The Commission considered it appropriate to refer to this functional aspect in the preamble. This decision reflects a concern that the inclusion of the functional aspect as part of the definition, as originally proposed, may suggest that this transport and dispersion is desirable, which is not the intention of the Commission. Long-range transboundary movement of polluting and degrading substances is recognized as one of the major problems of the present-day atmospheric environment,[8] with the Arctic region being

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arising out of hazardous activities (2006), *Yearbook ... 2006*, vol. II (Part Two), para. 66 (reproduced in General Assembly resolution 61/36, annex, of 4 December 2006); and the articles on the law of transboundary aquifers (2008), *Yearbook ... 2008*, vol. II (Part Two), paras. 53–54.

[3] A/CN.4/681 and Corr.1, para. 3.

[4] The inclusion of "atmospheric resources" among "other natural resources" by the former Committee on Natural Resources was first mentioned in the Committee's report on its first session, *Official Records of the Economic and Social Council, Fiftieth Session, Supplement No. 6* (E/4969-E/C.7/13), section 4 ("other natural resources"), para. 94 (d). The work of the Committee (later the Committee on Energy and Natural Resources for Development) was subsequently transferred to the Commission on Sustainable Development.

[5] "The natural resources of the earth including the air ... must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate" (adopted at Stockholm on 16 June 1972, see *Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972* (United Nations publication, Sales No. E.73.II.A.14 (A/CONF.48/14/Rev.1 and Corr.1), part one, chap. I, principle 2).

[6] "[A]tmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity" (World Charter for Nature, General Assembly resolution 37/7 of 28 October 1982, annex, general principles, para. 4).

[7] The World Trade Organization (WTO) Panel and Appellate Body recognized in the *Gasoline* case of 1996 that clean air was an "exhaustible natural resource" that could be "depleted". Report of the Appellate Body, *United States-Standards for Reformulated and Conventional Gasoline* (1996), WT/DS2/AB/R.

[8] See the 2001 Stockholm Convention on Persistent Organic Pollutants, United Nations, *Treaty Series*, vol. 2256, No. 40214, p. 119 (noting in the preamble that "persistent organic pollutants, ... are transported, through air ... across international boundaries and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems"). The 2012 amendment to the Gothenburg Protocol to the 1979 Convention on Long-range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg, 30 November 1999, United Nations, *Treaty Series*, vol. 2319, p. 81) indicates in the third preambular paragraph: "Concerned ...

identified as one of the areas most seriously affected by the worldwide spread of deleterious pollutants.[9]

(4) The third preambular paragraph acknowledges the "close interaction" that arises from, as a factual matter, the physical relationship between the atmosphere and the oceans. A significant proportion of the pollution of the marine environment from or through the atmosphere originates from land-based sources, including from anthropogenic activities on land.[10] Human activities are also responsible for global warming, which causes a rise in temperature of the oceans and in turn results in extreme atmospheric conditions of flood and drought.[11] In its resolution 71/257 of 23 December 2016, the General Assembly confirmed the effect of climate change on oceans and stressed the importance of increasing the scientific understanding of the oceans-atmosphere interface.[12]

(5) In 2015, the First Global Integrated Marine Assessment (first World Ocean Assessment) was completed as a comprehensive, in-depth study on the state of the marine environment including a chapter addressing in part the substances polluting the oceans from land-based sources through the atmosphere.[13] The summary of the report was approved by the General Assembly at its seventieth session.[14]

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that emitted [chemical substances] are transported in the atmosphere over long distance and may have adverse transboundary effects." The 2013 Minamata Convention on Mercury (Kumamoto (Japan), 10 October 2013, text available at https://treaties.un.org/doc/Treaties/2013/10/20131010%2011-16%20AM/CTC-XXVII-17.pdf) recognizes mercury as "a chemical of global concern owing to its long-range atmospheric transport" (first preambular para.); See, J.S. Fuglesvedt *et al.*, "Transport impacts on atmosphere and climate: metrics", *Atmospheric Environment*, vol. 44 (2010), pp. 4648–4677; D.J. Wuebbles, H. Lei and J.-T Lin, "Inter-continental transport of aerosols and photochemical oxidants from Asia and its consequences", *Environmental Pollution*, vol. 150 (2007), pp. 65–84; J.-T Lin, X.-Z Liang and D.J. Wuebbles, "Effects of inter-continental transport on surface ozone over the United States: Present and future assessment with a global model", *Geophysical Research Letters*, vol. 35 (2008).

[9] Several of these pollution threats to the Arctic environment have been identified, such as persistent organic pollutants and mercury, which originate mainly from sources outside the region. These pollutants end up in the Arctic from southern industrial regions of Europe and other continents *via* prevailing northerly winds and ocean circulation. See T. Koivurova, P. Kankaanpää and A. Stepien, "Innovative environmental protection: lessons from the Arctic," *Journal of Environmental Law*, vol. 27 (2015), pp. 285–311, at p. 297.

[10] R.A. Duce *et al.*, "The atmospheric input of trace species to the world ocean", *Global Biogeochemical Cycles*, vol. 5 (1991), pp. 193–259; T. Jickells and C.M. Moore, "The importance of atmospheric deposition for ocean productivity", *Annual Review of Ecology, Evolution, and Systematics*, vol. 46 (2015), pp. 481–501.

[11] According to the Intergovernmental Panel on Climate Change, "Climate change 2014 synthesis report: summary for policymakers", p. 4: "Ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010 (*high confidence*), with only about 1% stored in the atmosphere. On a global scale, the ocean warming is largest near the surface, and the upper 75 m warmed by 0.11 [0.09 to 0.13] °C per decade over the period 1971 to 2010. It is *virtually certain* that the upper ocean (0–700 m) warmed from 1971 to 2010, and it *likely* warmed between the 1870s and 1971". Because of the rise in ocean temperatures, many scientific analyses suggest risk of severe and widespread drought in the twenty-first century over many land areas. See S.K. Min *et al.*, "Human contribution to more-intense precipitation extremes", *Nature*, vol. 470 (2011), pp. 378–381; A. Dai, "Increasing drought under global warming in observations and models", *Nature Climate Change*, vol. 3 (2013), pp. 52–58; and J. Sheffield, E.F. Wood, and M.L. Roderick, "Little change in global drought over the past 60 years", *Nature*, vol. 491 (2012), pp. 435–438. See also Ø. Hov, "Overview: oceans and the atmosphere" and T. Jickells, "Linkages between the oceans and the atmosphere", in "Summary of the informal meeting of the International Law Commission: dialogue with atmospheric scientists (third session), 4 May 2017", paras. 4–12 and 21–30, respectively. Available from http://legal.un.org/docs/?path=../ilc/sessions/69/pdfs/english/informal_dialogue_4may2017.pdf&lang=E.

[12] General Assembly resolution 71/257 of 23 December 2016 on oceans and the law of the sea, paras. 185–196 and 279.

[13] United Nations Division for Ocean Affairs and the Law of the Sea, "First Global Integrated Marine Assessment (first World Ocean Assessment)". Available from http://www.un.org/depts/los/global_

(6) Among the various human activities that have an impact on the oceans, greenhouse gas emissions from ships contribute to global warming and climate change. The 2009 study by the International Maritime Organization (IMO) on greenhouse gas emissions classified such emissions from ships into four categories, namely: emissions of exhaust gases, cargo emissions, emissions of refrigerants and other emissions.[15] Research indicates that excessive greenhouse gas emissions from ships change the composition of the atmosphere and climate, and cause a negative impact on the marine environment and human health.[16]

(7) The General Assembly has continued to emphasize the urgency of addressing the effects of atmospheric degradation, such as increases in global temperatures, sea-level rise, ocean acidification and the impact of other climate changes that are seriously affecting coastal areas and low-lying coastal countries, including many least developed countries and small island developing States, and threatening the survival of many societies.[17]

(8) The third preambular paragraph is also linked to paragraph 1 of draft guideline 9 in the sense that the physical linkage that exists between the atmosphere and the oceans forms the physical basis of the interrelationship between the rules on the protection of the atmosphere and the rules of the law of the sea.[18]

(9) The fourth preambular paragraph pronounces, bearing in mind the importance of the problems relating to the atmosphere, as aforementioned, that the protection of the atmosphere from atmospheric pollution and atmospheric degradation is a "pressing concern of the international community as a whole". While a number of treaties and literature demonstrate some support for the concept of "common concern of humankind",[19] the

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reporting/WOA_RegProcess.htm (accessed 7 July 2017) (see, in particular, chap. 20 on "Coastal, riverine and atmospheric inputs from land").

[14] General Assembly resolution 70/235 of 23 December 2015.

[15] Ø. Buhaug and others, *Second IMO GHG Study 2009* (London, IMO, 2009), p. 23. See also T.W.P. Smith and others, *Third IMO GHG Study* (London, IMO, 2014), executive summary, table 1. M. Righi, J. Hendricks and R. Sausen, "The global impact of the transport sectors on atmospheric aerosol in 2030 — Part 1: land transport and shipping", *Atmospheric Chemistry and Physics*, vol. 15 (2015), pp. 633–651.

[16] Most of the greenhouse gas emissions from ships are emitted in or transported to the marine boundary layer where they affect atmospheric composition. See, e.g., V. Eyring and others, "Transport impacts on atmosphere and climate: shipping", *Atmospheric Environment*, vol. 44 (2010), pp. 4735, 4744–4745 and 4752–4753. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change asserted that greenhouse gas emissions have led to global ocean warming, the rise of ocean temperatures and ocean acidification (Intergovernmental Panel on Climate Change, "Climate change 2014 synthesis report", available from http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf (accessed 7 July 2017), p. 40; D.E.J. Currie and K. Wowk, "Climate change and CO_2 in the oceans and global oceans governance", *Carbon and Climate Law Review*, vol. 3 (2009), pp. 387 and 389; C. Schofield, "Shifting limits? Sea level rise and options to secure maritime jurisdictional claims" *Carbon and Climate Law Review*, vol. 3 (2009), p. 12; and S.R. Cooley and J.T. Mathis, "Addressing ocean acidification as part of sustainable ocean development", *Ocean Yearbook*, vol. 27 (2013), pp. 29–47.

[17] General Assembly resolution 70/1 of 25 September 2015, Transforming our world: the 2030 Agenda for Sustainable Development, para. 14 ("Climate change is one of the greatest challenges of our time and its adverse impacts undermine the ability of all countries to achieve sustainable development. Increases in global temperature, sea level rise, ocean acidification and other climate change impacts are seriously affecting coastal areas and low-lying coastal countries, including many least developed countries and small island developing States. The survival of many societies, and of the biological support systems of the planet, is at risk."). See also "Oceans and the law of the sea: report of the Secretary-General" (A/71/74/Add.1), chap. VIII ("Oceans and climate change and ocean acidification"), paras. 115–122.

[18] See para. (6) of the commentary to draft guideline 9 below.

[19] Paragraph 1 of the preamble to the 1992 United Nations Framework Convention on Climate Change ((New York, 9 May 1992, United Nations, *Treaty Series*, vol. 1771, No. 30822, p. 107) acknowledges that "change in the Earth's climate and its adverse effects are a common concern of humankind". Likewise, the preamble to the 1992 Convention on Biological Diversity (United Nations, *Treaty Series*, vol. 1760, No. 30619, p. 79) shows parties to be "[c]onscious ... of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere," (para. 2) and affirms that "the conservation of biological diversity is a common concern of humankind"

Commission decided not to adopt this language for the characterization of the problem, as the legal consequences of the concept of common concern of humankind remain unclear at the present stage of development of international law relating to the atmosphere. It was considered appropriate to express the concern of the international community as a matter of a factual statement, and not as a normative statement, as such, of the gravity of the atmospheric problems. In this context, therefore, the expression "a pressing concern of the international community as a whole" has been employed. This is an expression that the Commission has frequently employed as one of the criteria for the selection of new topics for inclusion in its long-term programme of work.[20]

(10) The fifth preambular paragraph, having regard to considerations of equity, concerns the special situation and needs of developing countries. One of the first attempts to incorporate such a principle was the Washington Conference of the International Labour Organization in 1919, at which delegations from Asia and Africa succeeded in ensuring the adoption of differential labour standards.[21] Another example is the Generalized System of Preferences elaborated under the United Nations Conference on Trade and Development in the 1970s, as reflected in draft article 23 of the Commission's 1978 draft articles on most-favoured-nation clauses.[22]

(para. 3). The 1994 Convention to Combat Desertification in Those Countries Experiencing Drought and/or Desertification, Particularly in Africa (United Nations, *Treaty Series*, vol. 1954, No. 33480, p. 3) adopted phrases similar to common concern in its preamble, including "the centre of concerns", "the urgent concern of the international community" and "problems of global dimension" for combatting desertification and drought. Other instruments such as the Minamata Convention on Mercury, the Stockholm Convention on Persistent Organic Pollutants and the Gothenburg Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution employ similar concepts to the common concern. See, A.E. Boyle, "International law and the protection of the global atmosphere: concepts, categories and principles", in *International Law and Global Climate Change*, (Leiden, Kluwer Academic, 1991), pp. 11–12; D. French, "Common concern, common heritage and other global(-ising) concepts: rhetorical devices, legal principles or a fundamental challenge?" in M. Bowman, P. Davies and E. Goodwin (eds.), *Research Handbook on Biodiversity and Law* (Cheltenham/Northampton, Edward Elgar, 2016), pp. 334–360, p. 347; A. Kiss, "The common concern of mankind", *Environmental Policy and Law*, vol. 27 (1997), p. 246; A.A. Cançado-Trindade and D.J. Attard, "The implication of the "common concern of mankind" concept on global environmental issues", in *Policies and Laws on Global Warming: International and Comparative Analysis*, T. Iwama (ed.) (Tokyo, Environmental Research Centre, 1991), pp. 7–13; J. Brunnée, "Common areas, common heritage, and common concern", in *The Oxford Handbook of International Environmental Law*, D. Bodansky, J. Brunnée and H. Hey (eds.) (Oxford, Oxford University Press, 2007), pp. 565–566. See also C. Kreuter-Kirchhoff, "Atmosphere, international protection", *Max Planck Encyclopedia of Public International Law*, vol. I, R. Wolfrum (ed.) (Oxford, Oxford University Press, 2012), pp. 737–744 (the atmosphere as a "common concern of mankind").

[20] *Yearbook ... 1997*, vol. II (Part Two), para. 238; *Yearbook ... 1998*, vol. II (Part Two), para. 553. See also *Official Records of the General Assembly, Sixty-ninth Session, Supplement No. 10* (A/69/10), para. 269. The Commission has agreed that it should not restrict itself to traditional topics, but could also consider those that reflect new developments in international law and pressing concerns of the international community as a whole.

[21] On the basis of art. 405, para. 3, of the 1919 Treaty of Versailles (Treaty of Peace between the Allied and Associated Powers and Germany, 28 June 1919), which became art. 19, para. 3, of the International Labour Organization Constitution (9 October 1946, United Nations, *Treaty Series*, vol. 15, No. 229, p. 35) (labour conventions "shall have due regard" to the special circumstances of countries where local industrial conditions are "substantially different"). The same principle also appeared in some of the conventions approved by the Organization in 1919 and in several conventions adopted afterwards. See I.F. Ayusawa, *International Labor Legislation* (New York, Columbia University, 1920), chap. VI, pp. 149 *et seq.*

[22] See art. 23 (The most-favoured-nation clause in relation to treatment under a generalized system of preferences) and art. 30 (New rules of international law in favour of developing countries) of the draft articles on the most-favoured-nation clauses adopted by the Commission at its thirtieth session in 1978, *Yearbook ... 1978*, vol. II (Part Two), paras. 74, see also paras. 47–72. S. Murase, *Economic Basis of International Law* (Tokyo, Yuhikaku, 2001), pp. 109–179 (in Japanese). And see the earlier exceptions for developing countries specified in art. XVIII of the 1947 General Agreement on Tariffs and Trade, United Nations, *Treaty Series*, vol. 55, No. 814, p. 194.

(11) The need for special consideration for developing countries in the context of environmental protection has been endorsed by a number of international instruments, such as the 1972 Stockholm Declaration,[23] and the 1992 Rio Declaration on Environment and Development (hereinafter, "Rio Declaration").[24] Principle 12 of the Stockholm Declaration attaches importance to "taking into account the circumstances and particular requirements of developing countries". Principle 6 of the Rio Declaration highlights "the special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable". The principle is similarly reflected in article 3 of the 1992 United Nations Framework Convention on Climate Change[25] and article 2 of the 2015 Paris Agreement under the United Nations Framework Convention on Climate Change (hereinafter, "Paris Agreement").[26]

(12) The formulation of the fifth preambular paragraph is based on the seventh paragraph of the preamble of the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses.[27]

(13) The sixth preambular paragraph addresses one of the most profound impacts of atmospheric degradation, that is the sea-level rise caused by global warming. It draws particular attention to the special situation of low-lying coastal areas and small island developing States due to sea-level rise. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change estimates that the global mean sea-level rise is likely to be between 26 cm and 98 cm by the year 2100.[28] While exact figures and rates of change still remain uncertain, the report states that it is "virtually certain" that sea levels will continue to rise during the twenty-first century, and for centuries beyond — even if the concentrations of greenhouse gas emissions are stabilized. Moreover, sea-level rise is likely to exhibit "a strong regional pattern, with some places experiencing significant deviations of local and regional sea level change from the global mean change".[29] That degree of change in sea levels may pose a potentially serious, maybe even disastrous, threat to many coastal areas, especially those with large, heavily populated and low-lying coastal areas, as well as to small island developing States.[30]

(14) The sixth preambular paragraph is linked to the interrelationship between the rules of international law relating to the protection of the atmosphere and the rules of the law of the sea addressed in paragraph 1 of draft guideline 9.[31] This preambular paragraph is also linked to the special consideration to be given to persons and groups in vulnerable situations, which are referred to in paragraph 3 of draft guideline 9.[32] The words "in

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[23] See L.B. Sohn, "The Stockholm Declaration on the Human Environment", *Harvard International Law Journal*, vol. 14 (1973), pp. 423–515, at pp. 485–493.

[24] Adopted at Rio de Janeiro on 14 June 1992, see *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992* (A/CONF.151/26/Rev.1 (vol. I) and Corr.1), resolution I, p. 3.

[25] United Nations, *Treaty Series*, vol. 1771, No. 30822, p. 107.

[26] Paris Agreement under the United Nations Framework Convention on Climate Change (Paris, 12 December 2015), https://treaties.un.org/doc/Treaties/2016/02/20160215%2006-03%20PM/Ch_XXVII-7-d.pdf .

[27] Adopted by the General Assembly in resolution 51/229 (annex) on 21 May 1997. The Convention entered into force on 17 August 2014.

[28] Intergovernmental Panel on Climate Change, *Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, United Kingdom, Cambridge University Press, 2013), p. 1180.

[29] *Ibid.*, p. 1140.

[30] See A.H.A. Soons, "The effects of a rising sea level on maritime limits and boundaries", *Netherlands International Law Review*, vol. 37 (1990), pp. 207–232; M. Hayashi, "Sea-level rise and the law of the sea: future options", in *The World Ocean in Globalisation: Climate Change, Sustainable Fisheries, Biodiversity, Shipping, Regional Issues* (Leiden, Brill/Martinus Nijhoff, 2011), pp. 187 *et seq*. See also, International Law Association, *Report of the Seventy-fifth Conference held in Sofia, August 2012* (London, 2012), pp. 385–428, and International Law Association, *Johannesburg Conference (2016): International Law and Sea Level Rise* (interim report), pp. 13–18.

[31] See para. (6) of the commentary to draft guideline 9 below.

[32] See para. (16) of the commentary to draft guideline 9 below.

particular" are intended to acknowledge specific areas without necessarily limiting the list of potentially affected areas.

(15) The seventh preambular paragraph emphasizes the interests of future generations, including with a view to human rights protection. The goal is to ensure that the planet remains habitable for future generations. In taking measures to protect the atmosphere today, it is important to take into account the long-term conservation of the quality of the atmosphere. The 2015 Paris Agreement, in its preamble, after acknowledging that climate change is a common concern of humankind, provides that parties should, when taking action to address climate change, respect, promote and consider, among other things, their respective obligations on human rights, as well as intergenerational equity. The importance of "intergenerational" considerations was already expressed in principle 1 of the 1972 Stockholm Declaration.[33] It also underpins the concept of sustainable development, as formulated in the 1987 Brundtland Report, *Our Common Future*,[34] and informs the 2030 Agenda for Sustainable Development.[35] It is also reflected in the preamble of the Convention on Biological Diversity of 1992,[36] and in other treaties.[37] Article 3, paragraph 1, of the United Nations Framework Convention on Climate Change of 1992 provides that: "Parties should protect the climate system for the benefit of present and future generations of humankind". The International Court of Justice has noted, in its 1996 advisory opinion in the *Nuclear Weapons* case with respect to such weapons, the imperative to take into account "in particular their … ability to cause damage to generations to come".[38]

(16) The Commission opted for the term "interests" rather than "benefit" under the seventh preambular paragraph. A similar formulation is used in draft guideline 6 which refers to the interests of future generations in the context of "equitable and reasonable utilization of the atmosphere".[39]

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[33] Principle 1 of the Declaration refers to the "solemn responsibility to protect and improve the environment for present and future generations".

[34] Report of the World Commission on Environment and Development, *Our Common Future* (Oxford, Oxford University Press, 1987). It emphasized the importance of "development that meets the needs of the present without compromising the ability of future generations" (p. 43).

[35] General Assembly resolution 70/1 of 25 September 2015, which emphasizes the need to protect the planet from degradation so that it can "support the needs of present and future generations".

[36] The Preamble of the Convention provides for the "benefit of present and future generations" in conservation and sustainable use of biological diversity.

[37] Art. 4 (vi) of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Vienna, 5 September 1997, United Nations, *Treaty Series*, vol. 2153, No. 37605, p. 303) provides that parties shall "strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation".

[38] *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996*, p. 226, at p. 244, para. 36.

[39] Though there are as yet no decisions by international tribunals concerning customary intergenerational rights, there have been many national court decisions, which may constitute practice for the purposes of customary international law, recognizing intergenerational equity, see C. Redgwell, "Intra- and inter-generational equity", in *The Oxford Handbook of International Climate Change Law*, C.P. Carlarne, K.R. Gray and R.G. Tarasofsky (eds.) (Oxford, Oxford University Press, 2016), pp. 185–201, at p. 198. See also Australia, *Gray v. Minister for Planning*, [2006] NSWLEC 720; India, *Vellore Citizens' Welfare Forum and State of Tamil Nadu (joining) v. Union of India and others*, original public interest writ petition, 1996 5 SCR 241, ILDC 443 (IN 1996); Kenya, *Waweru, Mwangi (joining) and others (joining) v. Kenya*, miscellaneous civil application, Case No. 118 of 2004, Application No. 118/04, ILDC 880 (KE 2006); South Africa, *Fuel Retailers Association of South Africa v. Director-General, Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province, and others*, [2007] ZACC 13, 10 BCLR 1059; Pakistan, *Rabab Ali v. Federation of Pakistan*, petition filed 6 April 2016 (summary available at www.ourchildrenstrust.org/pakistan). For commentary, see E. Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Tokyo, United Nations University Press, 1989), p. 96; M. Bruce, "Institutional aspects of a charter of the rights of future generations", in *Our Responsibilities Towards Future Generations*, S. Busuttil *et al.* (eds.) (Valetta, UNESCO and Foundation for International Studies, University of Malta, 1990), pp. 127–131; T. Allen, "The Philippine children's case: recognizing legal standing for future generations",

(17) The eighth preambular paragraph reproduces the 2013 understanding of the Commission on the inclusion of the topic in its programme of work at its sixty-fifth session in 2013. It was agreed that the terminology and location of this paragraph would be revisited at a later stage in the Commission's work on this topic.[40]

Guideline 1
Use of terms

For the purposes of the present draft guidelines,

(a) "Atmosphere" means the envelope of gases surrounding the Earth;

(b) "Atmospheric pollution" means the introduction or release by humans, directly or indirectly, into the atmosphere of substances contributing to deleterious effects extending beyond the State of origin of such a nature as to endanger human life and health and the Earth's natural environment;

(c) "Atmospheric degradation" means the alteration by humans, directly or indirectly, of atmospheric conditions having significant deleterious effects of such a nature as to endanger human life and health and the Earth's natural environment.

Commentary

(1) The Commission has considered it desirable, as a matter of practical necessity, to provide a draft guideline on the "Use of terms" in order to have a common understanding of what is covered by the present draft guidelines. The terms used are provided only "for the purposes of the present draft guidelines", and are not intended in any way to affect any existing or future definitions of any such terms in international law.

(2) No definition has been given to the term "atmosphere" in the relevant international instruments. The Commission, however, considered it necessary to provide a working definition for the present draft guidelines, and the definition given in paragraph (a) is inspired by the definition given by a working group of the Intergovernmental Panel on Climate Change.[41]

(3) The Commission considered it necessary that its legal definition be consistent with the approach of scientists. According to scientists, the atmosphere exists in what is called

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Georgetown International Environmental Law Review, vol. 6 (1994), pp. 713–741 (referring to the judgment of the Philippine Supreme Court in *Minors Oposa et al. v. Factoran* (30 July 1993), *International Legal Materials*, vol. 33 (1994), p. 168). Standing to sue in some proceedings was granted on the basis of the "public trust doctrine", which holds governments accountable as trustees for the management of common environmental resources. See M.C. Wood and C.W. Woodward IV, "Atmospheric trust litigation and the constitutional right to a healthy climate system: judicial recognition at last", *Washington Journal of Environmental Law and Policy*, vol. 6 (2016), pp. 634–684; C. Redgwell, *Intergenerational Trusts and Environmental Protection* (Manchester, Manchester University Press, 1999); K. Coghill, C. Sampford and T. Smith (eds.), *Fiduciary Duty and the Atmospheric Trust* (London, Routledge, 2012); M.C. Blumm and M.C. Wood, *The Public Trust Doctrine in Environmental and Natural Resources Law*, 2nd ed. (Durham, North Carolina, Carolina Academic Press, 2015); and K. Bosselmann, *Earth Governance: Trusteeship of the Global Commons* (Cheltenham, Edward Elgar Publishing, 2015). In a judgment on 13 December 1996, the Indian Supreme Court declared the public trust doctrine "the law of the land"; *M.C. Mehta v. Kamal Nath and Others*, (1997) 1 Supreme Court Cases 388, reprinted in C.O. Okidi, ed., *Compendium of Judicial Decisions in Matters Related to the Environment: National Decisions*, vol. I (Nairobi, United Nations Environment Programme/United Nations Development Programme, 1998), p. 259. See J. Razzaque, "Application of public trust doctrine in Indian environmental cases", *Journal of Environmental Law*, vol. 13 (2001), pp. 221–234.

[40] See also *Official Records of the General Assembly, Sixty-eighth Session, Supplement No. 10* (A/68/10), para. 168.

[41] Fifth Assessment Report, Working Group III, annex I. Intergovernmental Panel on Climate Change, *Climate Change 2014: Mitigation of Climate Change*, O. Edenhofer et al. (eds.) (Cambridge University Press, 2014), p. 1252, available at www.ipcc.ch/report/ar5/wg3/.

the atmospheric shell.[42] Physically, it extends upwards from the Earth's surface, which is the bottom boundary of the dry atmosphere. The average composition of the atmosphere up to an altitude of 25 km is as follows: nitrogen (78.08%), oxygen (20.95%), together with trace gases, such as argon (0.93%), helium and radiatively active greenhouse gases, such as carbon dioxide (0.035%) and ozone, as well as greenhouse water vapour in highly variable amounts.[43] The atmosphere also contains clouds and aerosols.[44] The atmosphere is divided vertically into five spheres on the basis of temperature characteristics. From the lower to upper layers, these spheres are: troposphere, stratosphere, mesosphere, thermosphere, and the exosphere. Approximately 80 per cent of air mass exists in the troposphere and 20 per cent in the stratosphere. The thin, white, hazy belt (with a thickness of less than 1 per cent of the radius of the globe) that one sees when looking at the earth from a distance is the atmosphere. Scientifically these spheres are grouped together as the "*lower atmosphere*", which extends to an average altitude of 50 km, and can be distinguished from the "*upper atmosphere*".[45] The temperature of the atmosphere changes with altitude. In the troposphere (up to the tropopause, at a height of about 12 km), the temperature decreases as altitude increases because of the absorption and radiation of solar energy by the surface of the planet.[46] In contrast, in the stratosphere (up to the stratopause, at a height of nearly 50 km), temperature gradually increases with height[47] because of the absorption of ultraviolet radiation by ozone. In the mesosphere (up to the mesopause, at a height of above 80 km), temperatures again decrease with altitude. In the thermosphere, temperatures once more rise rapidly because of X-ray and ultraviolet radiation from the sun. The atmosphere "has no well-defined upper limit".[48]

(4) The definition, in paragraph (a), of the "atmosphere" as the envelope of gases surrounding the Earth represents a "physical" description of the atmosphere. There is also a "functional" aspect, which involves the large-scale movement of air. The atmospheric movement has a dynamic and fluctuating feature. The air moves and circulates around the Earth in a complicated formation called "atmospheric circulation". The Commission has decided, as noted earlier in the commentary to the preamble, to refer to this functional aspect of the atmosphere in the second paragraph of the preamble.[49]

(5) It is particularly important to recognize the function of the atmosphere as a medium within which there is constant movement as it is within that context that the "transport and dispersion" of polluting and degrading substances occurs. Indeed, the long-range transboundary movement of polluting substances is one of the major problems for the

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[42] The American Meteorology Society defines the "atmospheric shell" (also called atmospheric layer or atmospheric region) as "any one of a number of strata or 'layers' of the earth's atmosphere" (available at http://glossary.ametsoc.org/wiki/Atmospheric_shell).

[43] Physically, water vapour, which accounts for roughly 0.25 per cent of the mass of the atmosphere, is a highly variable constituent. In atmospheric science, "because of the large variability of water vapor concentrations in air, it is customary to list the percentages of the various constituents in relation to dry air". Ozone concentrations are also highly variable. Over 0.1 ppmv (parts per million by volume) of ozone concentration in the atmosphere is considered hazardous to human beings. See J.M. Wallace and P.V. Hobbs, *Atmospheric Science: An Introductory Survey*, 2nd ed. (Boston, Elsevier Academic Press, 2006), p. 8.

[44] *Ibid.*

[45] The American Meteorological Society defines the "lower atmosphere" as "generally and quite loosely, that part of the atmosphere in which most weather phenomena occur (i.e., the troposphere and lower stratosphere); hence used in contrast to the common meaning for the upper atmosphere" (available at http://glossary.ametsoc.org/wiki/Lower_atmosphere). The "upper atmosphere" is defined as residual, that is "the general term applied to the atmosphere above the troposphere" (available at http://glossary.ametsoc.org/wiki/Upper_atmosphere).

[46] The thickness of the troposphere is not the same everywhere; it depends on the latitude and the season. The top of the troposphere lies at an altitude of about 17 km at the equator, although it is lower at the poles. On average, the height of the outer boundary of the troposphere is about 12 km. See E.J. Tarbuck, F.K. Lutgens and D. Tasa, *Earth Science*, 13th ed. (New Jersey, Pearson, 2011), p. 466.

[47] Strictly, the temperature of the stratosphere remains constant to a height of about 20–35 km and then begins a gradual increase.

[48] See Tarbuck, Lutgens and Tasa, *Earth Science* (footnote 46 above), p. 467.

[49] See above para. (3) of the commentary to the preamble.

atmospheric environment. In addition to transboundary pollution, other concerns relate to the depletion of the ozone layer and to climate change.

(6) Paragraph (b) defines "atmospheric pollution" and addresses transboundary air pollution, whereas paragraph (c) defines "atmospheric degradation" and refers to global atmospheric problems. By stating "by humans", both paragraphs (b) and (c) make it clear that the draft guidelines concern "anthropogenic" atmospheric pollution and atmospheric degradation. The Commission is aware that the focus on human activity, whether direct or indirect, is a deliberate one, as the present guidelines seek to provide guidance to States and the international community.

(7) The term "atmospheric pollution" (or, air pollution) is sometimes used broadly to include global deterioration of atmospheric conditions such as ozone depletion and climate change,[50] but the term is used in the present draft guidelines in a narrow sense, in line with existing treaty practice. It thus excludes the global issues from the definition of atmospheric pollution.

(8) In defining "atmospheric pollution", paragraph (b) uses the language that is essentially based on article 1 (a) of the 1979 Convention on Long-Range Transboundary Air Pollution,[51] which provides that:

> "[a]ir pollution" means "the introduction by man, directly or indirectly, of substances or energy into the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment, and 'air pollutants' shall be construed accordingly."

It may also be noted that article 1, paragraph 1 (4), of the United Nations Convention on the Law of the Sea[52] defines the term "pollution" for the purposes of the marine environment as meaning "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health".[53] The deleterious effects arising from an introduction or release have to be of such a nature as to endanger human life and health and the Earth's natural environment, including by contributing to endangering them.

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[50] For instance, art. 1, para. 1, of the Cairo resolution (1987) of the Institute of International Law (*Institut de droit international*) on "Transboundary Air Pollution" provides that: "[f]or the purpose of this Resolution, 'pollution' means any physical, chemical or biological *alteration in the composition* or quality of the atmosphere which results directly or indirectly from human action or omission and produces injurious or deleterious effects in the environment of other States or of areas beyond the limits of national jurisdiction." (emphasis added). Available from www.idi-iil.org, *Resolutions*.

[51] Convention on Long-Range Transboundary Air Pollution (Geneva, 13 November 1979), United Nations, *Treaty Series*, vol. 1302, No. 21623, p. 217. The formulation of art. 1 (a) of the Convention on Long-Range Transboundary Air Pollution goes back to the definition of pollution by the Council of the Organization for Economic Cooperation and Development (OECD) in its Recommendation C(74)224 on "Principles concerning Transfrontier Pollution", of 14 November 1974 (*International Legal Materials*, vol. 14 (1975), p. 243), which reads as follows: "For the purpose of these principles, pollution means the introduction by man, directly or indirectly, of substances or energy into the environment resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems, and impair or interfere with amenities and other legitimate uses of the environment". See H. van Edig (ed.), *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977), p. 13; see also P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (3rd ed.) (Oxford, Oxford University Press, 2009), pp. 188–189; A. Kiss and D. Shelton, *International Environmental Law* (London, Graham & Trotman, 1991), p. 117 (definition of pollution: "also forms of energy such as noise, vibrations, heat, radiation are included").

[52] United Nations Convention on the Law of the Sea (Montego Bay, 10 December 1982), United Nations, *Treaty Series*, vol. 1833, No. 31363, p. 3.

[53] Art. 212 of the United Nations Convention on the Law of the Sea provides for an obligation to prevent airborne pollution of the sea, and to that extent, the definition of "pollution" in this Convention is relevant to atmospheric pollution.

(9) While article 1 (a) of the Convention on Long-Range Transboundary Air Pollution and article 1, paragraph 1 (4), of the United Nations Convention on the Law of the Sea provide for "introduction of energy" (as well as substances) as part of the "pollution", the Commission has decided not to make an explicit reference to the term "energy" in the text of paragraph (b) of the draft guideline. It is the understanding of the Commission that, for the purposes of the draft guidelines, the word "substances" includes "energy". "Energy" is understood to include heat, light, noise and radioactivity introduced and released into the atmosphere through human activities.[54]

(10) The expression "effects extending beyond the State of origin" in paragraph (b) clarifies that the draft guidelines address the transboundary effects in the sense provided in article 1 (b) of the 1979 Convention on Long-Range Transboundary Air Pollution that:

> "[l]ong-range transboundary air pollution" means air pollution whose physical origin is situated wholly or in part within the area under the national jurisdiction of one State and which has adverse effects in the area under the jurisdiction of another State at such a distance that it is not generally possible to distinguish the contribution of individual emission sources or groups of sources.

(11) Since "atmospheric pollution" is defined narrowly in paragraph (b), it is necessary, for the purposes of the draft guidelines, to address issues other than atmospheric pollution by means of a different definition. For this purpose, paragraph (c) provides the definition of "atmospheric degradation". This definition is intended to include problems of ozone depletion and climate change. It covers the alteration of the global atmospheric conditions caused by humans, whether directly or indirectly. These may be changes to the physical environment or biota or alterations to the composition of the global atmosphere. The 1985 Vienna Convention for the Protection of the Ozone Layer[55] provides the definition of "adverse effects" in article 1, paragraph 2, as meaning "changes in the physical environment or biota, including changes in climate, which have significant deleterious

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[54] With regard to heat, see World Meteorological Organization/International Global Atmospheric Chemistry, Project Report, "Impacts of megacities on air pollution and climate", Global Atmosphere Watch Report No. 205 (Geneva, World Meteorological Organization, 2012); D. Simon and H. Leck, "Urban adaptation to climate/environmental change: governance, policy and planning", Special Issue, *Urban Climate*, vol. 7 (2014) pp. 1–134; J.A. Arnfield, "Two decades of urban climate research: a review of turbulence, exchanges of energy and water, and the urban heat island", *International Journal of Climatology*, vol. 23 (2003), pp. 1–26; L. Gartland, *Heat Islands: Understanding and Mitigating Heat in Urban Areas* (London, Earthscan, 2008); see, in general, B. Stone Jr., *The City and the Coming Climate: Climate Change in the Places We Live* (Cambridge, Massachusetts, Cambridge University Press, 2012). Regarding light pollution, see C. Rich and T. Longcore (eds.), *Ecological Consequences of Artificial Night Lighting*, (Washington, D.C., Island Press, 2006); P. Cinzano and F. Falchi, "The propagation of light pollution in the atmosphere", *Monthly Notices of the Royal Astronomic Society*, vol. 427 (2012), pp. 3337–3357; F. Bashiri and C. Rosmani Che Hassan, "Light pollution and its effects on the environment", *International Journal of Fundamental Physical Sciences*, vol. 4 (2014), pp. 8–12. Regarding acoustic/noise pollution, see e.g. annex 16 of the 1944 Convention on International Civil Aviation (Chicago, 7 December 1944, United Nations, *Treaty Series*, vol. 15, No. 295 p. 295), vol. I: *Aircraft Noise*, 5th ed. 2008; see P. Davies and J. Goh, "Air transport and the environment: regulating aircraft noise", *Air and Space Law*, vol. 18 (1993), pp. 123–135. Concerning radioactive emissions, see D. Rauschning, "Legal problems of continuous and instantaneous long-distance air pollution: interim report", *Report of the Sixty-Second Conference of the International Law Association* (Seoul, 1986), pp. 198–223, at p. 219; and International Atomic Energy Agency, *Environmental Consequences of the Chernobyl Accident and their Remediation: Twenty Years of Experience – Report of the Chernobyl Forum Expert Group 'Environment'*, Radiological Assessment Report Series (2006), STI/PUB/1239. See also United Nations Scientific Committee on the Effects of Atomic Radiation, 2013 Report to the General Assembly, *Scientific Annex A: Levels and effects of radiation exposure due to the nuclear accident after the 2011 great east-Japan earthquake and tsunami* (United Nations publication, Sales No. E.14.IX.1), available at www.unscear.org/docs/reports/2013/13-85418_Report_2013_Annex_A.pdf. This is without prejudice to the peaceful uses of nuclear energy in relation to climate change in particular (see International Atomic Energy Agency, *Climate Change and Nuclear Power 2014* (Vienna, 2014), p. 7).

[55] Vienna Convention for the Protection of Ozone Layer (Vienna, 22 March 1985), United Nations, *Treaty Series*, vol. 1513, No. 26164, p. 293.

effects on human health or on the composition, resilience and productivity of natural and managed ecosystems, or on materials useful to mankind." Article 1, paragraph 2, of the United Nations Framework Convention on Climate defines "climate change" as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

(12) The term "significant deleterious effects" is intended to qualify the range of human activities to be covered by the draft guidelines. The Commission has frequently employed the term "significant" in its previous work.[56] The Commission has stated that "*significant is something more than 'detectable' but need not be at the level of 'serious' or 'substantial'*. The harm must lead to real detrimental effects [and]... such detrimental effects must be able to be measured by factual and objective standards".[57] Moreover, the term "significant", while determined by factual and objective criteria, also involves a value determination that depends on the circumstances of a particular case and the period in which such determination is made. For instance, a particular deprivation at a particular time might not be considered "significant" because at that time scientific knowledge or human appreciation did not assign much value to the resource. The question of what constitutes "significant" is more of a factual assessment.[58]

(13) While with respect to "atmospheric pollution" the introduction or release of substances has to contribute only to "deleterious" effects, in the case of "atmospheric degradation" the alteration of atmospheric conditions must have "significant deleterious effects". As is evident from draft guideline 2, on the scope of the guidelines, the present guidelines are concerned with the protection of the atmosphere from both atmospheric pollution and atmospheric degradation. As noted in paragraph (11) above, "adverse effects" in the Vienna Convention for the Protection of Ozone Layer (art. 1, para. 2) refers to changes, which have significant deleterious effects. The word "deleterious" refers to something harmful, often in a subtle or unexpected way.

Guideline 2
Scope of the guidelines

1. The present draft guidelines concern the protection of the atmosphere from atmospheric pollution and atmospheric degradation.

2. The present draft guidelines do not deal with, but are without prejudice to, questions concerning the polluter-pays principle, the precautionary principle, common but differentiated responsibilities, the liability of States and their nationals, and the transfer of funds and technology to developing countries, including intellectual property rights.

3. The present draft guidelines do not deal with specific substances, such as black carbon, tropospheric ozone and other dual-impact substances, which are the subject of negotiations among States.

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[56] See for example art. 7 of the Convention on the Law of the Non-navigational Uses of International Watercourses (1997) (General Assembly resolution 51/229 of 21 May 1997, annex); art. 1 of the draft articles on prevention of transboundary harm from hazardous activities (2001) (General Assembly resolution 62/68, annex); principle 2 of the draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities (2006) (General Assembly resolution 61/36, annex); art. 6 of the articles on the law of transboundary aquifers (2008) (General Assembly resolution 63/124, annex).

[57] Para. (4) of the commentary to draft art. 2 of the draft articles on Prevention of transboundary harm from hazardous activities, 2001, *Yearbook ... 2001*, Vol. II (Part Two) and corrigendum, p. 152, at para. 98.

[58] See, for example, the commentary to the draft articles on prevention of transboundary harm from hazardous activities (paras. (4) and (7) of the commentary to draft art. 2), *ibid.* See also the commentary to the draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities (paras. (1) to (3) of the commentary to draft principle 2), *Yearbook ... 2006*, vol. II (Part Two), para. 67.

4. Nothing in the present draft guidelines affects the status of airspace under international law nor questions related to outer space, including its delimitation.

Commentary

(1) Draft guideline 2 sets out the scope of the draft guidelines in relation to the protection of the atmosphere. Paragraph 1 describes the scope in a positive manner, indicating what the guidelines are concerned with, namely the protection of the atmosphere from atmospheric pollution and atmospheric degradation, while paragraphs 2 and 3 are formulated in a negative way, specifying what is not covered by the present draft guidelines. Paragraph 4 contains a saving clause on airspace and outer space.

(2) Paragraph 1 defines the scope of the draft guidelines on the basis of the definitions contained in paragraphs (b) and (c) of draft guideline 1. It will be recalled that the paragraph had previously been adopted by the Commission with alternative formulations in brackets, namely, "[contain guiding principles relating to]" and "[deal with]", which were left subject to further consideration. Upon review of the entire set of draft guidelines, the words "address", "relate to" or "concern" were considered and it was concluded that "concern", which had been used in defining the scope of the topic "Identification of customary international law", was more appropriate than the other options. Thus, paragraph 1 was adopted using the term "concern", which was preferred over the phrases "contain guiding principles relating to" and "deal with".

(3) Paragraph 1 deals with questions of the protection of the atmosphere in two areas, atmospheric pollution and atmospheric degradation. The draft guidelines are concerned only with anthropogenic causes and not with those of natural origins such as volcanic eruptions and meteorite collisions. The focus on transboundary pollution and global atmospheric degradation caused by human activity reflects the current realities, which are supported by the science.[59] According to the Intergovernmental Panel on Climate Change, the science indicates with 95 per cent certainty that human activity is the dominant cause of observed warming since the mid-twentieth century. The Panel has noted that human influence on the climate system is clear. Such influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea-level rise, and in changes in some climate extremes.[60] The Panel has further noted that it is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic "forcings" together.[61]

(4) The guidelines will also not deal with domestic or local pollution. It may be noted however that whatever happens locally may sometimes have a bearing on the transboundary and global context in so far as the protection of the atmosphere is concerned. Ameliorative human action, taken individually or collectively, may need to take into account the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

(5) Sulphur dioxide and nitrogen oxides are the main sources of transboundary atmospheric pollution,[62] while climate change and depletion of the ozone layer are the two principal concerns leading to atmospheric degradation. [63] Certain ozone depleting substances also contribute to global warming.[64]

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[59] See generally, Intergovernmental Panel on Climate Change, *Climate Change 2013: The Physical Science Basis", Summary for Policy makers*, available at www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf.

[60] *Ibid.*

[61] *Ibid.*

[62] Birnie, Boyle, Redgwell, *International Law and the Environment* (see footnote 51 above), p. 342.

[63] *Ibid.*, p. 336. The linkages between climate change and ozone depletion are addressed in the preamble as well as in art. 4 of the United Nations Framework Convention on Climate Change. The linkage between transboundary atmospheric pollution and climate change is addressed in the preamble and art. 2, para. 1, of the 2012 amendment of the Gothenburg Protocol.

[64] *Ibid.*

(6) Paragraphs 2 and 3, as well as the fourth preambular paragraph, reflect the 2013 understanding of the Commission reached when the topic was included in the programme of work of the Commission at its sixty-fifth session in 2013.[65]

(7) Paragraph 4 is a saving clause that the draft guidelines do not affect the status of airspace under international law. The atmosphere and airspace are two entirely different concepts, which should be distinguished. Airspace is a static and spatial-based institution over which the State, within its territory, has "complete and exclusive sovereignty." For instance, article 1 of the Convention on International Civil Aviation, provides that "every State has complete and exclusive sovereignty over the 'airspace' above its territory".[66] In turn, article 2 of the same Convention deems the territory of a State to be the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of such State. The airspace beyond the boundaries of territorial waters is regarded as being outside the sovereignty of any State and is open for use by all States, like the high seas. On the other hand, the atmosphere, as an envelope of gases surrounding the Earth, is dynamic and fluctuating, with gases that constantly move without regard to territorial boundaries.[67] The atmosphere is invisible, intangible and non-separable.

(8) Moreover, while the atmosphere is spatially divided into spheres on the basis of temperature characteristics, there is no sharp scientific boundary between the atmosphere and outer space. Beyond 100 km, traces of the atmosphere gradually merge with the emptiness of space.[68] The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, is silent on the definition of "outer space".[69] The matter has been under discussion within the context of the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space since 1959, which has looked at both spatial and function approaches to the questions of delimitation.[70]

(9) Accordingly, the Commission elected, in paragraph 4, to indicate that the draft guidelines do not affect the legal status of airspace nor address questions related to outer space. Moreover, the reference to outer space reflects of the 2013 understanding of the Commission.

Guideline 3
Obligation to protect the atmosphere

States have the obligation to protect the atmosphere by exercising due diligence in taking appropriate measures, in accordance with applicable rules of international law, to prevent, reduce or control atmospheric pollution and atmospheric degradation.

Commentary

(1) Draft guideline 3 is central to the present draft guidelines. In particular, draft guidelines 4, 5 and 6, below, flow from this guideline; these three draft guidelines seek to apply various principles of international environmental law to the specific situation of the protection of the atmosphere.

(2) The draft guideline refers to both the transboundary and global contexts. It will be recalled that draft guideline 1 contains a "transboundary" element in defining "atmospheric

[65] *Official Records of the General Assembly, Sixty-eighth Session, Supplement 10* (A/68/10), para. 168.

[66] See art. 2, para. 2, of the United Nations Convention on the Law of the Sea, which provides that "sovereignty extends to the air space over the territorial sea as well as to its bed and subsoil".

[67] See generally Birnie, Boyle and Redgwell, *International Law and the Environment* (footnote 51 above), chap. 6.

[68] Tarbuck, Lutgens and Tasa, *Earth Science* (see footnote 46 above), pp. 465 and 466.

[69] Moscow, London and Washington, D.C., 27 January 1967, United Nations, *Treaty Series*, vol. 610, No. 8843, p. 205.

[70] See, generally, B. Jasani (ed.), *Peaceful and Non-Peaceful uses of Space: Problems of Definition for the Prevention of an Arms Race*, United Nations Institute for Disarmament Research (New York, Taylor and Francis, 1991), especially chaps. 2–3.

pollution" (as the introduction or release by humans, directly or indirectly, into the atmosphere of substances contributing to deleterious effects "extending beyond the State of origin", of such a nature as to endanger human life and health and the Earth's natural environment), and a "global" dimension in defining "atmospheric degradation" (as the alteration by humans, directly or indirectly, of atmospheric conditions having significant deleterious effects of such a nature as to endanger human life and health and the Earth's natural environment). Draft guideline 3 delimits the obligation to protect the atmosphere to preventing, reducing and controlling atmospheric pollution and atmospheric degradation, thus differentiating the kinds of obligations pertaining to each. The formulation of the present draft guideline finds its genesis in principle 21 of the Stockholm Declaration, which reflected the finding in the *Trail Smelter* arbitration.[71] This is further reflected in principle 2 of the 1992 Rio Declaration.

(3) The reference to "States" for the purposes of the draft guideline denotes both the possibility of States acting "individually" and "jointly", as appropriate.

(4) As presently formulated, the draft guideline is without prejudice to whether or not the obligation to protect the atmosphere is an *erga omnes* obligation in the sense of article 48 of the articles on responsibility of States for internationally wrongful acts,[72] a matter on which there are different views. While there is support for recognizing that the obligations pertaining to the protection of the atmosphere from transboundary atmospheric pollution of global significance and global atmospheric degradation are obligations *erga omnes*, there is also support for the view that the legal consequences of such a recognition are not yet fully clear in the context of the present topic.

(5) Significant adverse effects on the atmosphere are caused, in large part, by the activities of individuals and private industries, which are not normally attributable to a State. In this respect, due diligence requires States to "ensure" that such activities within their jurisdiction or control do not cause significant adverse effects. This does not mean, however, that due diligence applies solely to private activities since a State's own activities are also subject to the due diligence rule.[73] Due diligence is an obligation to make best possible efforts in accordance with the capabilities of the State controlling the activities. Therefore, even where significant adverse effects materialize, that does not automatically constitute a failure of due diligence. Such failure is limited to the State's negligence to meet its obligation to take all appropriate measures to prevent, reduce or control human activities where these activities have or are likely to have significant adverse effects. The States' obligation "to ensure" does not require the achievement of a certain result (obligation of result) but only requires the best available efforts so as not to cause significant adverse effects (obligation of conduct). It requires States to take appropriate measures to control public and private conduct. Due diligence implies a duty of vigilance and prevention. It also requires taking into account the context and evolving standards, of both regulation and technology.

(6) The reference to "prevent, reduce or control" denotes a variety of measures to be taken by States, whether individually or jointly, in accordance with applicable rules as may

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[71] See United Nations, *Reports of International Arbitral Awards* (UNRIAA), vol. III (Sales No. 1949.V.2), pp. 1905–1982 (Award of 11 March 1941), at p. 1965 *et seq.*; and the first report of the Special Rapporteur (A/CN.4/667), para. 43. See also A.K. Kuhn, "The Trail Smelter Arbitration, United States and Canada", *American Journal of International Law*, vol. 32 (1938), pp. 785–788 and *ibid.*, vol. 35 (1941), pp. 665–666; and J.E. Read, "The Trail Smelter Dispute", *Canadian Yearbook of International Law*, vol. 1 (1963), pp. 213–229.

[72] Art. 48 (Invocation of responsibility by a State other than an injured State) provides that: "1. Any State other than an injured State is entitled to invoke the responsibility of another State in accordance with paragraph 2 if ... (*b*) the obligation breached is owed to the international community as a whole" (General Assembly resolution 56/83 of 12 December 2001. For the articles adopted by the Commission and the commentaries thereto, see *Yearbook ... 2001*, vol. II (Part Two) and corrigendum, chap. IV, sect. E).

[73] *Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, I.C.J. Reports 2010*, p. 14, at p. 55, para. 101 ("the principle of prevention, as a customary rule, has its origins in the due diligence that is required of a State in its territory").

be relevant to atmospheric pollution on the one hand and atmospheric degradation on the other. The phrase "prevent, reduce or control" draws upon formulations contained in the United Nations Convention on the Law of the Sea[74] and the United Nations Framework Convention on Climate Change.

(7) Even though the appropriate measures to "prevent, reduce or control" apply to both atmospheric pollution and atmospheric degradation, the reference to "applicable rules of international law" signals a distinction between measures taken, bearing in mind the transboundary nature of atmospheric pollution and global nature of atmospheric degradation and the different rules that are applicable in relation thereto. In the context of transboundary atmospheric pollution, the obligation of States to prevent significant adverse effect is firmly established as customary international law, as confirmed, for example, by the Commission's articles on prevention of transboundary harm from hazardous activities[75] and by the jurisprudence of international courts and tribunals.[76] However, the existence of this obligation is still somewhat unsettled for global atmospheric degradation. The International Court of Justice has stated that "the existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment … of areas beyond national control is now part of the corpus of international law",[77] and has attached great significance to respect for the environment "not only for States but also for the whole of mankind".[78] The Tribunal in the *Iron Rhine Railway* case stated that the "duty to prevent, or at least mitigate [significant harm to the environment] … has now become a principle of general international law".[79] At the same time, the views of members diverged as to whether these pronouncements may be deemed as fully supporting the recognition that the obligation to prevent, reduce, or control global atmospheric degradation exists under customary international law. Nonetheless, such an obligation is found in relevant conventions.[80] In this context, it should be noted that the Paris Agreement,

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[74] Art. 194.

[75] *Yearbook … 2001*, vol. II (Part Two) and corrigendum, chap. V, sect. E, art. 3 (Prevention): "The State of origin shall take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof." The Commission has also dealt with the obligation of prevention in its articles on responsibility of States for internationally wrongful acts. Art. 14, para. 3, provides that "The breach of an international obligation requiring a State to prevent a given event occurs when the event occurs and extends over the entire period during which the event continues" (*ibid.*, chap. IV, sect. E). According to the commentary: "Obligations of prevention are usually construed as best efforts obligations, requiring States to take all reasonable or necessary measures to prevent a given event from occurring, but without warranting that the event will not occur" (*ibid.*, para. (14) of the commentary to art. 14, para. 3) The commentary illustrated "the obligation to prevent transboundary damage by air pollution, dealt with in the *Trail Smelter* arbitration" as one of the examples of the obligation of prevention (*ibid.*).

[76] The International Court of Justice has emphasized prevention as well. In the *Gabčíkovo-Nagymaros Project* case, the Court stated that it "is mindful that, in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage" (*Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment, I.C.J. Reports 1997*, p. 7, at p. 78, para. 140). In the *Iron Rhine Railway* case, the Arbitral Tribunal also stated that "[t]oday, in international environmental law, a growing emphasis is being put on the duty of prevention" (*Award in the Arbitration regarding the Iron Rhine ("Ijzeren Rijn") Railway between the Kingdom of Belgium and the Kingdom of the Netherlands*, decision of 24 May 2005, UNRIAA, vol. XXVII, pp. 35–125, at p. 116, para. 222).

[77] *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996*, p. 226, at pp. 241–242, para. 29.

[78] *Gabčíkovo-Nagymaros Project* (see footnote 76 above), p. 41, para. 53; the Court cited the same paragraph in *Pulp Mills on the River Uruguay* (see footnote 73 above), p. 78, para. 193.

[79] *Iron Rhine Railway* (see footnote 76 above), pp. 66–67, para. 59.

[80] See, for example, United Nations Convention on the Law of the Sea, Vienna Convention for the Protection of the Ozone Layer (Vienna, 22 March 1985), *ibid.*, vol. 1513, No. 26164, p. 293, United Nations Framework Convention on Climate Change, Convention on Biological Diversity, United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, 14 October 1994), *ibid.*, vol. 1954, No. 33480, p. 3, Stockholm Convention on Persistent Organic Pollutants (Stockholm, 22 May 2001), *ibid.*, vol.

"acknowledging" in the preamble that "climate change is a common concern of humankind", states "the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity".[81]

Guideline 4
Environmental impact assessment

States have the obligation to ensure that an environmental impact assessment is undertaken of proposed activities under their jurisdiction or control which are likely to cause significant adverse impact on the atmosphere in terms of atmospheric pollution or atmospheric degradation.

Commentary

(1) Draft guideline 4 deals with environmental impact assessment. This is the first of three draft guidelines that flow from the overarching draft guideline 3. In the *Construction of a Road in Costa Rica along the San Juan River* case, the International Court of Justice affirmed that "a State's obligation to exercise due diligence in preventing significant transboundary harm requires that State to ascertain whether there is a risk of significant transboundary harm prior to undertaking an activity having the potential adversely to affect the environment of another State. If that is the case, the State concerned must conduct an environmental impact assessment".[82] In the above-mentioned case, the Court concluded that the State in question "ha[d] not complied with its obligation under general international law to perform an environmental impact assessment prior to the construction of the road".[83] In a separate opinion, Judge Owada noted that "an environmental impact assessment plays an important and even crucial role in ensuring that the State in question is acting with due diligence under general international environmental law".[84] Two other judgments, in the cases regarding the *Gabčíkovo-Nagymaros Project*[85] and the *Pulp Mills on the River Uruguay*,[86] alluded to the importance of an environmental impact assessment. The Seabed Disputes Chamber of the International Tribunal for the Law of the Sea rendered its Advisory Opinion on the *Responsibilities and obligations of States regarding activities in the Area* in 2011, in which the Chamber listed the obligation to conduct an environmental impact assessment as one of the direct obligations incumbent on sponsoring States.[87]

(2) The draft guideline is formulated in the passive tense — "States have the obligation to ensure that an environmental impact assessment is undertaken" as opposed to "States have an obligation to undertake an appropriate environmental impact assessment" — in order to signal that this is an obligation of conduct and given the broad nature of economic actors the obligation does not necessarily attach to the State itself to perform the assessment. What is required is that the State put in place the necessary legislative, regulatory and other measures for an environmental impact assessment to be conducted with respect to proposed activities. Notification and consultations are key to such an assessment.

(3) The phrase "of proposed activities under their jurisdiction or control" is intended to indicate that the obligation of States to ensure that an environment impact assessment is undertaken is in respect of activities under their jurisdiction or control. Since environmental threats have no respect for borders, it is not precluded that States, as part of their global

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2256, No. 40214, p. 119, and Minamata Convention on Mercury (Kumamoto, 10 October 2013). Available from https://treaties.un.org (Status of Multilateral Treaties Deposited with the Secretary general, chap. XVII.17).

[81] Art. 2, para. 1.

[82] *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica), Judgment, I.C.J. Reports 2015*, p. 665, para. 153.

[83] *Ibid.*, para. 168.

[84] *Ibid.*, Separate Opinion of Judge Owada, para. 18.

[85] *Gabčíkovo-Nagymaros Project* (see footnote 76 above).

[86] *Pulp Mills on the River Uruguay* (see footnote 73 above).

[87] International Tribunal for the Law of the Sea, *Responsibilities and Obligations of States with Respect to Activities in the Area (Request for Advisory Opinion submitted to the Seabed Dispute Chamber)*, advisory opinion, 1 February 2011, *ITLOS Reports 2011*, p. 10, at paras. 122 and 141–150.

environmental responsibility, take decisions jointly regarding environmental impact assessments.

(4) A threshold was considered necessary for triggering the environmental impact assessment. The phrase "which are likely to cause significant adverse impact" has accordingly been inserted. It is drawn from the language of principle 17 of the Rio Declaration. Moreover, there are other instruments, such as the Espoo Convention on Environmental Impact Assessment in a Transboundary Context,[88] that use a similar threshold. In the *Pulp Mills* case, the Court indicated that "it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource".[89]

(5) By having a threshold of "likely to cause significant adverse impact", the draft guideline excludes an environmental impact assessment for an activity whose impact is likely to be minor. The impact of the potential harm must be "significant" for both "atmospheric pollution" and "atmospheric degradation". What constitutes "significant" requires a factual not a legal determination.[90]

(6) The phrase "in terms of atmospheric pollution or atmospheric degradation" was considered important as it relates the draft guideline to the two main issues of concern to the present draft guidelines as regards protection of the atmosphere, namely transboundary atmospheric pollution and atmospheric degradation. While the relevant precedents for the requirement of an environmental impact assessment primarily address transboundary contexts, it is considered that there is a similar requirement for projects that are likely to have significant adverse effects on the global atmosphere, such as those activities involving intentional large-scale modification of the atmosphere.[91] As regards the protection of the atmosphere, such activities may carry a more extensive risk of severe damage than even those causing transboundary harm, and therefore the same considerations should be applied *a fortiori* to those activities potentially causing global atmospheric degradation. Thus, the Kiev Protocol on Strategic Environmental Assessment to the Convention on the Environmental Impact in the Transboundary Context encourages "strategic environmental assessment" of the likely environmental, including health, effects, which means any effect on the environment, including human health, flora, fauna, biodiversity, soil, climate, air, water, landscape, natural sites, material assets, cultural heritage and the interaction among these factors.[92]

(7) While it is acknowledged that transparency and public participation are important components in ensuring access to information and representation, it was considered that the parts dealing with procedural aspects of an environmental impact assessment should not be dealt with in the draft guideline itself. Principle 10 of the 1992 Rio Declaration provides that environmental issues are best handled with the participation of all concerned citizens, at the relevant level. This includes access to information, the opportunity to participate in decision-making processes, and effective access to judicial and administrative proceedings.

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[88] Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 25 February 1991), United Nations, *Treaty Series*, vol. 1989, No. 34028, p. 309.

[89] *Pulp Mills on the River Uruguay* (see footnote 73 above), p. 83, para. 204.

[90] The Commission has frequently employed the term "significant" in its work, including in the articles on the prevention of transboundary harm from hazardous activities (2001). In that case, the Commission chose not to define the term, recognizing that the question of "significance" requires a factual determination rather than a legal one (see the general commentary, para. (4), *Yearbook ... 2001*, vol. II (Part Two) and corrigendum, chap. V, sect. E). See, for example, paras. (4) and (7) of the commentary to art. 2 of the articles on the prevention of transboundary harm from hazardous activities (*ibid.*). See also the commentary to the draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities (commentary to draft principle 2, paras. (1)–(3), *Yearbook ... 2006*, vol. II (Part Two), chap. V, sect. E).

[91] See draft guideline 7.

[92] Protocol on Strategic Environmental Assessment to the Convention on the Environmental Impact in the Transboundary Context (Kiev, 21 May 2003), ECE/MP.EIA/2003/2 (available from: www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/protocolenglish), art. 2, paras. 6–7.

The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters[93] also addresses these issues. The Kiev Protocol on Strategic Environmental Assessment encourages the carrying out of public participation and consultations, and the taking into account of the results of the public participation and consultations in a plan or programme.[94]

Guideline 5
Sustainable utilization of the atmosphere

1. Given that the atmosphere is a natural resource with a limited assimilation capacity, its utilization should be undertaken in a sustainable manner.

2. Sustainable utilization of the atmosphere includes the need to reconcile economic development with protection of the atmosphere.

Commentary

(1) The atmosphere is a natural resource with limited assimilation capacity.[95] It is often not conceived of as exploitable in the same sense as, for example, mineral or oil and gas resources are explored and exploited. In truth, however, the atmosphere, in its physical and functional components, is exploitable and exploited. The polluter exploits the atmosphere by reducing its quality and its capacity to assimilate pollutants. The draft guideline draws analogies from the concept of "shared resource", while also recognizing that the unity of the global atmosphere requires recognition of the commonality of interests. Accordingly, this draft guideline proceeds on the premise that the atmosphere is a resource with limited assimilation capacity, the ability of which to sustain life on Earth is impacted by anthropogenic activities. In order to secure its protection, it is important to see it as a resource that is subject to exploitation, thereby subjecting the atmosphere to the principles of conservation and sustainable use. Some members expressed doubts whether the atmosphere could be treated analogously as transboundary watercourses or aquifers.

(2) It is acknowledged in paragraph 1 that the atmosphere is a "natural resource with a limited assimilation capacity". The second part of paragraph 1 seeks to integrate conservation and development so as to ensure that modifications to the planet continue to enable the survival and wellbeing of organisms on Earth. It does so by reference to the proposition that the utilization of the atmosphere should be undertaken in a sustainable manner. This is inspired by the Commission's formulations as reflected in the Convention on the Law of the Non-navigational Uses of International Watercourses,[96] and the articles on the law of transboundary aquifers.[97]

(3) The term "utilization" is used broadly and in general terms evoking notions beyond actual exploitation. The atmosphere has been utilized in several ways. Likely, most of these activities that have been carried out so far are those conducted without a clear or concrete intention to affect atmospheric conditions. However, there have been certain activities the very purpose of which is to alter atmospheric conditions, such as weather modification. Some of the proposed technologies for intentional, large-scale modification of the atmosphere[98] are examples of the utilization of the atmosphere.

(4) The formulation "its utilization should be undertaken in a sustainable manner" in the present draft guideline is simple and not overly legalistic, which well reflects a

[93] Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus, 28 June 1998), United Nations, *Treaty Series*, vol. 2161, No. 37770, p. 447.

[94] Art. 2, paras. 6–7.

[95] See para. (2) of the commentary to the preamble, above.

[96] Arts. 5 and 6. For the draft articles and commentaries thereto adopted by the Commission, see *Yearbook ... 1994*, vol. II (Part Two), chap. III, sect. E.

[97] General Assembly resolution 63/124 of 11 December 2008, annex, arts. 4–5. For the draft articles and commentaries thereto adopted by the Commission, see *Yearbook ... 2008*, vol. II (Part Two), chap. IV, sect. E.

[98] See draft guideline 7 below.

paradigmatic shift towards viewing the atmosphere as a natural resource that ought to be utilized in a sustainable manner. It is presented more as a statement of international policy and regulation than an operational code to determine rights and obligations among States.

(5) Paragraph 2 builds upon the language of the International Court of Justice in its judgment in the *Gabčíkovo-Nagymaros Project* case, in which it referred to the "need to reconcile environmental protection and economic development".[99] There are other relevant precedents. [100] The reference to "protection of the atmosphere" as opposed to "environmental protection" seeks to focus the paragraph on the subject matter of the present topic, which is the protection of the atmosphere.

Guideline 6
Equitable and reasonable utilization of the atmosphere

The atmosphere should be utilized in an equitable and reasonable manner, taking into account the interests of present and future generations.

Commentary

(1) Although equitable and reasonable utilization of the atmosphere is an important element of sustainability, as reflected in draft guideline 5, it is considered important to state it as an autonomous principle. Like draft guideline 5, the present guideline is formulated at a broad level of abstraction and generality.

(2) The draft guideline is formulated in general terms so as to apply the principle of equity[101] to the protection of the atmosphere as a natural resource that is to be shared by all.

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[99] *Gabčíkovo-Nagymaros Project* (see footnote 76 above), p. 78, para. 140.

[100] In the 2006 order of the *Pulp Mills* case, the International Court of Justice highlighted "the importance of the need to ensure environmental protection of shared natural resources while allowing for sustainable economic development" (*Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Provisional Measures, Order of 13 July 2006, *I.C.J. Reports 2006*, p. 113, at p. 133, para. 80); the 1998 WTO Appellate Body decision on *United States – Import Prohibition of Certain Shrimp and Shrimp Products* stated that, "recalling the explicit recognition by WTO Members of the objective of sustainable development in the preamble of the *WTO Agreement*, we believe it is too late in the day to suppose that article XX(g) of the [General Agreement on Tariffs and Trade] may be read as referring only to the conservation of exhaustible mineral or other non-living resources" (Appellate Body Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, adopted 6 November 1998, para. 131, see also paras. 129 and 153); in the 2005 arbitral case of the *Iron Rhine Railway*, the Tribunal held as follows: "[t]here is considerable debate as to what, within the field of environmental law, constitutes 'rules' or 'principles': what is 'soft' law; and which environmental treaty law or principles have contributed to the development of customary international law. … The emerging principles, whatever their current status, make reference to … sustainable development. … Importantly, these emerging principles now integrate environmental protection into the development process. Environmental law and the law on development stand not as alternatives but as mutually reinforcing, integral concepts, which require that where development may cause signify harm to the environment there is a duty to prevent, or at least mitigate such harm. … This duty, in the opinion of the Tribunal, has now become a principle of general international law", *Iron Rhine Railway* (see footnote 76 above), paras. 58–59; the 2013 Partial Award of the *Indus Waters Kishenganga Arbitration (Pakistan v. India)* states: "[t]here is no doubt that States are required under contemporary customary international law to take environmental protection into consideration when planning and developing projects that may cause injury to a bordering State. Since the time of *Trail Smelter*, a series of international … arbitral decisions have addressed the need to manage natural resources in a sustainable manner. In particular, the International Court of Justice expounded upon the principle of 'sustainable development' in *Gabčíkovo-Nagymaros* (see footnote 76 above), referring to the 'need to reconcile economic development with protection of the environment" (Permanent Court of Arbitration Award Series, *Indus Waters Kishenganga Arbitration (Pakistan v. India): Record of Proceedings 2010-2013*, Partial Award of 18 February 2013, para. 449. This was confirmed by the Final Award of 20 December 2013, para. 111.

[101] See, for example, J. Kokott, "Equity in international law", in *Fair Weather? Equity Concerns in Climate Change*, F.L. Toth (ed.) (Abingdon and New York, Routledge, 2014), pp. 173-192; *Frontier Dispute (Burkina Faso v. Mali), Judgment, I.C.J Reports 1986*, p. 554; See, in general, P. Weil, "L'équité dans la jurisprudence de la Cour internationale de Justice: Un mystère en voie de dissipation?", in *Fifty Years of the International Court of Justice: Essays in Honour of Sir Robert*

The first part of the sentence deals with "equitable and reasonable" utilization. The formulation that the "atmosphere should be utilized in an equitable and reasonable manner" draws, in part, upon article 5 of the Convention on the Law of the Non-navigational Uses of International Watercourses, and article 4 of articles on the law of transboundary aquifers. It requires a balancing of interests and consideration of all relevant factors that may be unique to either atmospheric pollution or atmospheric degradation.

(3) The second part of the formulation addresses questions of intra- and intergenerational equity.[162] In order to draw out the link between the two aspects of equity, the Commission elected to use the phrase "taking into account the interests of future" instead of "and for the benefit of present and future generations of humankind". The words "the interests of", and not "the benefit of", have been used to signal the integrated nature of the atmosphere, the "exploitation" of which needs to take into account a balancing of interests to ensure sustenance for the Earth's living organisms.

Guideline 7
Intentional large-scale modification of the atmosphere

Activities aimed at intentional large-scale modification of the atmosphere should be conducted with prudence and caution, subject to any applicable rules of international law.

Commentary

(1) Draft guideline 7 deals with activities the very purpose of which is to alter atmospheric conditions. As the title of the draft guideline signals, it addresses only intentional modification on a large scale.

(2) The term "activities aimed at intentional large-scale modification of the atmosphere" is taken in part from the definition of "environmental modification techniques" that appears in the Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques,[163] which refers to techniques for changing — through the deliberate manipulation of natural processes — the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.

(3) These activities include what is commonly understood as "geo-engineering", the methods and technologies of which encompass carbon dioxide removal and solar radiation management. Activities related to the former involve the ocean, land and technical systems and seek to remove carbon dioxide from the atmosphere through natural sinks or through chemical engineering. Proposed techniques for carbon dioxide removal include: soil carbon sequestration; carbon capture and sequestration; ambient air capture; ocean fertilization; ocean alkalinity enhancement; and enhanced weathering. Indeed, afforestation has traditionally been employed to reduce carbon dioxide.

(4) According to scientific experts, solar radiation management is designed to mitigate the negative impacts of climate change by intentionally lowering the surface temperatures of the Earth. Proposed activities here include: "albedo enhancement", a method that involves increasing the reflectiveness of clouds or the surface of the Earth, so that more of the heat of the sun is reflected back into space; stratospheric aerosols, a technique that

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Jennings, V. Lowe and M. Fitzmaurice (eds.) (Cambridge, United Kingdom, Cambridge University Press, 1996), pp. 121–144; F. Francioni, "Equity in international law," in *Max Plank Encyclopedia of Public International Law*, vol. III, R. Wolfrum (ed.) (Oxford, Oxford University Press, 2013), pp. 632–642.

[162] C. Redgwell, "Principles and emerging norms in international law: intra- and inter-generational equity," *in* Cinnamon P. Carlarne, *et al.*, eds., *The Oxford Handbook on International Climate Change Law* (Oxford: Oxford University Press, 2016), pp. 185–201.; D. Shelton, "Equity" in *Oxford Handbook of International Environmental Law*, Bodansky *et al.* (eds.) (footnote 19 above), pp. 639–662.

[163] Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques (New York, 10 December 1976), United Nations, *Treaty Series*, vol. 1108, No. 17119, p. 151.

involves the introduction of small, reflective particles into the upper atmosphere to reflect sunlight before it reaches the surface of the Earth; and space reflectors, which entail blocking a small proportion of sunlight before it reaches the Earth.

(5) As noted above, the term "activities" is broadly understood. However, there are certain other activities that are prohibited by international law, which are not covered by the present draft guideline, such as by the Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques[104] and Protocol I to the Geneva Conventions of 1949.[105] Accordingly, the present draft guideline applies only to "non-military" activities. Military activities involving deliberate modifications of the atmosphere are outside the scope of the present guideline.

(6) Likewise, other activities will continue to be governed by various regimes. For example, afforestation has been incorporated in the Kyoto Protocol to the United Nations Framework Convention on Climate Change[106] regime and in the Paris Agreement (art. 5, para. 2). Under some international legal instruments, measures have been adopted for regulating carbon capture and storage. The 1996 Protocol (London Protocol)[107] to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter[108] now includes an amended provision and annex, as well as new guidelines for controlling the dumping of wastes and other matter. To the extent that "ocean iron fertilization" and "ocean alkalinity enhancement" relate to questions of ocean dumping, the 1972 Convention and the London Protocol thereto are relevant.

(7) Activities aimed at intentional large-scale modification of the atmosphere have a significant potential for preventing, diverting, moderating or ameliorating the adverse effects of disasters and hazards, including drought, hurricanes, tornadoes, and enhancing crop production and the availability of water. At the same time, it is also recognized that they may have long-range and unexpected effects on existing climatic patterns that are not confined by national boundaries. As noted by the World Meteorological Organization with respect to weather modification: "The complexity of the atmospheric processes is such that a change in the weather induced artificially in one part of the world will necessarily have repercussions elsewhere … . Before undertaking an experiment on large-scale weather modification, the possible and desirable consequences must be carefully evaluated, and satisfactory international arrangements must be reached."[109]

(8) It is also not the intention of the present draft guideline to stifle innovation and scientific advancement. Principles 7 and 9 of the Rio Declaration acknowledge the importance of new and innovative technologies and cooperation in these areas. At the same time, this does not mean that those activities always have positive effects.

(9) Accordingly, the draft guideline does not seek either to authorize or to prohibit such activities unless there is agreement among States to take such a course of action. It simply

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[104] See art. 1.

[105] Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 1977, United Nations, *Treaty Series*, vol. 1125, No. 17512, p. 3, arts. 35, para. 3 and 55; see also Rome Statute of the International Criminal Court (Rome, 17 July 1998), United Nations, *Treaty Series*, vol. 2187, No. 38544, p. 3, art. 8, para. 2 (b) (iv).

[106] Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto, 11 December 1997), United Nations, *Treaty Series*, vol. 2303, No. 30822, p. 162.

[107] 1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London, 7 November 1996), *International Legal Materials*, vol. 36 (1997), p. 7.

[108] Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London, Mexico City, Moscow and Washington, D.C., 29 December 1972), United Nations, *Treaty Series*, vol. 1046, No. 15749, p. 138.

[109] See *Second Report on the Advancement of Atmospheric Science and Their Application in the Light of the Developments in Outer Space* (Geneva, World Meteorological Organization, 1963); see also Decision 8/7 (Earthwatch: assessment of outer limits) of the Governing Council of the United Nations Environment Programme, Part A (Provisions for co-operation between States in weather modification) of 29 April 1980.

sets out the principle that such activities, if undertaken, should be conducted with prudence and caution. The reference to "prudence and caution" is inspired by the language of the International Tribunal for the Law of the Sea in the cases of *Southern Blue Fin Tuna*,[110] the *Case of Mox Plant*;[111] and the *Case concerning Land Reclamation*.[112] The Tribunal stated in the last case: "*Considering* that, given the possible implications of land reclamation on the marine environment, prudence and caution require that Malaysia and Singapore establish mechanisms for exchanging information and assessing the risks or effects of land reclamation works and devising ways to deal with them in the areas concerned." The draft guideline is cast in hortatory language, aimed at encouraging the development of rules to govern such activities, within the regimes competent in the various fields relevant to atmospheric pollution and atmospheric degradation.

(10) The last part of the guideline refers to "subject to any applicable rules of international law". It is understood that international law would continue to operate in the field of application of the draft guideline.

(11) It is widely acknowledged that such an activity should be conducted in a fully disclosed and transparent manner, and that an environmental impact assessment provided for in draft guideline 4 may be required for such an activity. It is considered that a project involving intentional large-scale modification of the atmosphere may well carry an extensive risk of severe damage, and therefore that *a fortiori* an assessment is necessary for such an activity.

(12) A number of members remained unpersuaded that there was a need for a draft guideline on this matter, which essentially remains controversial, and the discussion on it was evolving, and is based on scant practice. Other members were of the view that the draft guideline could be enhanced during second reading.

Guideline 8 [5][113]
International cooperation

1. States have the obligation to cooperate, as appropriate, with each other and with relevant international organizations for the protection of the atmosphere from atmospheric pollution and atmospheric degradation.

2. States should cooperate in further enhancing scientific knowledge relating to the causes and impacts of atmospheric pollution and atmospheric degradation. Cooperation could include exchange of information and joint monitoring.

Commentary

(1) International cooperation is at the core of the whole set of the present draft guidelines. The concept of international cooperation has undergone a significant change in international law,[114] and today is to a large extent built on the notion of common interests of

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[110] *Southern Blue Fin Tuna Cases (New Zealand v. Japan; Australia v. Japan)*, Provisional Measures, Order of 27 August 1999, *ITLOS Reports 1999*, p. 280, at para. 77. The Tribunal stated that "*[c]onsidering* that, in the view of the Tribunal, the parties should in the circumstances act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna".

[111] *Mox Plant (Ireland v. United Kingdom)*, Provisional Measures, Order of 3 December 2001, *ITLOS Reports 2001*, p. 95, at para. 84 ("*[c]onsidering* that, in the view of the Tribunal, prudence and caution require that Ireland and the United Kingdom cooperate in exchanging information concerning risks or effects of the operation of the Mox plant and in devising ways to deal with them, as appropriate").

[112] *Case concerning Land Reclamation by Singapore in and around the Strait of Johor (Malaysia v. Singapore)*, Provisional Measures, Order of 8 October 2003, *ITLOS Reports 2003*, p. 10, at para. 99.

[113] The draft guideline was renumbered during the sixty-eighth session of the Commission. The original number appears in square brackets.

[114] W. Friedmann, *The Changing Structure of International Law* (London, Stevens & Sons, 1964), pp. 60–71; C. Leben, "The changing structure of international law revisited by way of introduction", *European Journal of International Law*, vol. 3 (1997), pp. 399–408. See also, J. Delbrück, "The international obligation to cooperate — an empty shell or a hard law principle of international law? —

the international community as a whole.[115] The fourth paragraph of the preamble to the present draft guidelines recognizes this in stating that the protection of the atmosphere from atmospheric pollution and degradation is "a pressing concern of the international community as a whole".

(2) In this context, paragraph 1 of the present draft guideline, provides the obligation of States to cooperate, as appropriate. In concrete terms, such cooperation is with other States and with relevant international organizations. The phrase "as appropriate" denotes certain flexibility and latitude for States in carrying out the obligation to cooperate depending on the nature and subject matter required for cooperation. The forms in which such cooperation may occur may also vary depending on the situation and allows for the exercise of a certain margin of appreciation of States. It may be at the bilateral, regional or multilateral levels. States may also individually take appropriate action.

(3) In the *Pulp Mills* case, the International Court of Justice emphasized linkages attendant to the obligation to inform cooperation between the parties and the obligation of prevention. The Court noted that, "it is by cooperating that the States concerned can jointly manage the risks of damage to the environment ... so as to prevent the damage in question".[116]

(4) International cooperation is found in several multilateral instruments relevant to the protection of the environment. Both the Stockholm Declaration and the Rio Declaration, in principle 24 and principle 27, respectively, stress the importance of cooperation, entailing good faith and a spirit of partnership.[117] In addition, among some of the existing treaties, the Vienna Convention for the Protection of the Ozone Layer (1985) provides, in its preamble, that the Parties to this Convention are "*[a]ware* that measures to protect the ozone layer from modifications due to human activities require international co-operation and action". Furthermore, the preamble of the United Nations Framework Convention on Climate Change (1992) acknowledges that "the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response ...", while reaffirming "the principle of sovereignty of States in international cooperation to address climate change".[118]

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a critical look at a much debated paradigm of modern international law", H.P. Hestermeyer et al. (eds.), *Coexistence, Cooperation and Solidarity* (Liber Amicorum Rüdiger Wolfrum), vol. 1 (Leiden, Martinus Njihoff, 2012), pp. 3–16.

[115] B. Simma, "From bilateralism to community interests in international law", *Collected Courses of The Hague Academy of International Law, 1994-VI*, vol. 250, pp. 217–384; N. Okuwaki, "On compliance with the obligation to cooperate: new developments of 'international law for cooperation'", in *Aspects of International Law Studies* (Festschrift for Shinya Murase), J. Eto (ed.) (Tokyo, Shinzansha, 2015), pp. 5–46, at pp. 16–17 (in Japanese).

[116] *Pulp Mills on the River Uruguay* (footnote 73 above), p. 49, para. 77.

[117] Principle 24 of the Stockholm Declaration states:

"International matters concerning the protection and improvement of the environment should be handled in a cooperative spirit by all countries, big or small, on an equal footing. Cooperation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States."
Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972 (see footnote 5 above).

Principle 274 of the Rio Declaration states:

"States and people shall cooperate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development."
Report of the United Nations Conference on the Human Environment, Rio de Janeiro, 3–14 June 1992, vol. I: *Resolutions adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and corrigenda), resolution 1, annex I, chap. I.

[118] See also section 2 of Part XII of the United Nations Convention on the Law of the Sea, which provides for "Global and Regional Cooperation", setting out "Cooperation on global or regional basis" (art. 197), "Notification of imminent or actual damage" (art. 198), "Contingency plans against pollution" (art. 199), "Studies, research programmes and exchange of information and data" (art. 200)

(5) Paragraph 1 of article 8 of the Convention on the Law of the Non-navigational Uses of International Watercourses, on the general obligation to cooperate, provides that:

> "[W]atercourse States shall cooperate on the basis of sovereign equality, territorial integrity and mutual benefit in order to attain optimal utilization and adequate protection of an international watercourse."

(6) In its work, the Commission has also recognized the importance of the obligation to cooperate. The articles on prevention of transboundary harm from hazardous activities (2001) provide in draft article 4, on cooperation, that:

> "States concerned shall cooperate in good faith and, as necessary, seek the assistance of one or more competent international organizations in preventing significant transboundary harm or at any event in minimizing the risk thereof."

Further, the articles on the law of transboundary aquifers provide in draft article 7, General obligation to cooperate, that:

> "1. Aquifer States shall cooperate on the basis of sovereign equality, territorial integrity, sustainable development, mutual benefit and good faith in order to attain equitable and reasonable utilization and appropriate protection of their transboundary aquifers or aquifer systems.
>
> 2. For the purpose of paragraph 1, aquifer States should establish joint mechanisms of cooperation."

(7) Finally, the articles on the protection of persons in the event of disasters (2016) provide, in draft article 7, a duty to cooperate.[119]

(8) Cooperation could take a variety of forms. Paragraph (b) of the draft guidelines stresses, in particular, the importance of cooperation in enhancing scientific knowledge relating to the causes and impacts of atmospheric pollution and atmospheric degradation. Paragraph (b) also highlights the exchange of information and joint monitoring.

(9) The Vienna Convention for the Protection of the Ozone Layer provides, in its preamble, that international cooperation and action should be "based on relevant scientific and technical considerations", and in article 4, paragraph (1), on cooperation in the legal, scientific and technical fields, there is provision that:

> "The Parties shall facilitate and encourage the exchange of scientific, technical, socio-economic, commercial and legal information relevant to this Convention as further elaborated in annex II. Such information shall be supplied to bodies agreed upon by the Parties."

Annex II to the Convention gives a detailed set of items for information exchange. Article 4, paragraph 2, provides for cooperation in the technical fields, taking into account the needs of developing countries.

(10) Article 4, paragraph 1, of the United Nations Framework Convention on Climate Change, regarding commitments, provides that:

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and "Scientific criteria for regulations" (art. 201). Section 2 of Part XIII on Marine Scientific Research of the United Nations Convention on the Law of the Sea provides for "International Cooperation", setting out "Promotion of international cooperation" (art. 242), "Creation of favourable conditions" (art. 243) and "Publication and dissemination of information and knowledge" (art. 244).

[119] Draft art. 7 provides that:

"In the application of the present draft articles, States shall, as appropriate, cooperate among themselves, with the United Nations, with the components of the Red Cross and Red Crescent Movement, and with other assisting actors."

The articles were adopted by the Commission at its sixty-eighth session, in 2016, and submitted to the General Assembly as a part of the Commission's report covering the work of that session (A/71/10), para. 48. In its resolution71/141 of 13 December 2016, the General Assembly took note of the draft articles, and invited Governments to submit comments concerning the recommendation by the Commission to elaborate a convention on the basis of the articles.

> "All Parties ... shall (e) Cooperate in preparing for adaptation to the impacts of climate change; ... (g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies; (h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies; (i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations ..."

(11) The obligation to cooperate also includes, *inter alia*, the exchange of information. In this respect, it may also be noted that article 9 of the Convention on the Law of the Non-navigational Uses of International Watercourses has a detailed set of provisions on exchange of data and information. Moreover, the Convention on Long-Range Transboundary Air Pollution provides in article 4 that the Contracting Parties "shall exchange information on and review their policies, scientific activities and technical measures aimed at combating, as far as possible, the discharge of air pollutants which may have adverse effects, thereby contributing to the reduction of air pollution including long-range transboundary air pollution". The Convention also has detailed provisions on cooperation in the fields of research and development (art. 7); exchange of information (art. 8); and implementation and further development of the cooperative programme for the monitoring and evaluation of the long-range transmission of air pollutants in Europe (art. 9). Similarly, the Eastern Africa Regional Framework Agreement on Air Pollution (Nairobi Agreement, 2008)[120] and the West and Central Africa Regional Framework Agreement on Air Pollution (Abidjan Agreement, 2009)[121] have identical provisions on international cooperation. The parties agree to:

> "1.2 Consider the synergies and co-benefits of taking joint measures against the emission of air pollutants and greenhouse gases; 1.4 Promote the exchange of educational and research information on air quality management; 1.5 Promote regional cooperation to strengthen the regulatory institutions ..."

(12) The second sentence of draft article 17, paragraph 4, of the articles on the law of transboundary aquifers provides that: "Cooperation may include coordination of international emergency actions and communications, making available emergency response personnel, emergency response equipment and supplies, scientific and technical expertise and humanitarian assistance". In turn, the draft articles on the protection of persons in the event of disaster, provides in draft article 9, that "[f]or the purposes of the present draft articles, cooperation includes humanitarian assistance, coordination of international relief actions and communications, and making available relief personnel, equipment and goods, and scientific, medical and technical resources". Further, draft article 10 (Cooperation for risk reduction) provides that "[c]ooperation shall extend to the taking of measures intended to reduce the risk of disasters".

(13) In the context of protecting the atmosphere, enhancing scientific knowledge relating to the causes and impacts of atmospheric pollution and atmospheric degradation is considered key by the Commission.

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[120] Available at https://web.archive.org/web/20111226174901/http://www.unep.org/urban_environment/PDFs/EABAQ2008-AirPollutionAgreement.pdf.

[121] Available at https://web.archive.org/web/20111224143143/http://www.unep.org/urban_environment/PDFs/BAQ09_AgreementEn.Pdf.

Guideline 9
Interrelationship among relevant rules

1. The rules of international law relating to the protection of the atmosphere and other relevant rules of international law, including, *inter alia*, the rules of international trade and investment law, of the law of the sea and of international human rights law, should, to the extent possible, be identified, interpreted and applied in order to give rise to a single set of compatible obligations, in line with the principles of harmonization and systemic integration, and with a view to avoiding conflicts. This should be done in accordance with the relevant rules set forth in the Vienna Convention on the Law of Treaties of 1969, including articles 30 and 31, paragraph 3 (c), and the principles and rules of customary international law.

2. States should, to the extent possible, when developing new rules of international law relating to the protection of the atmosphere and other relevant rules of international law, endeavour to do so in a harmonious manner.

3. When applying paragraphs 1 and 2, special consideration should be given to persons and groups particularly vulnerable to atmospheric pollution and atmospheric degradation. Such groups may include, *inter alia*, indigenous peoples, people of the least developed countries and people of low-lying coastal areas and small island developing States affected by sea-level rise.

Commentary

(1) Draft guideline 9 addresses "interrelationship among relevant rules"[122] and seeks to reflect the relationship between rules of international law relating to the protection of the atmosphere and other relevant rules of international law. Paragraphs 1 and 2 are general in nature, while paragraph 3 places emphasis on the protection of groups that are particularly vulnerable to atmospheric pollution and atmospheric degradation. Atmospheric pollution and atmospheric degradation are defined in draft guideline 1 on the use of terms. Those terms focus on pollution and degradation caused "by humans". That necessarily means that human activities governed by other fields of law have a bearing on the atmosphere and its protection. It is therefore important that conflicts and tensions between rules relating to the protection of the atmosphere and rules relating to other fields of international law are to the extent possible avoided. Accordingly, draft guideline 9 highlights the various techniques in international law for addressing tensions between legal rules and principles, whether they relate to a matter of interpretation or a matter of conflict. The formulation of draft guideline 9 draws upon the conclusions reached by the Commission's Study Group on fragmentation of international law: difficulties arising from the diversification and expansion of international law.[123]

(2) Paragraph 1 addresses three kinds of legal processes, namely the identification of the relevant rules, their interpretation and their application. The phrase "and with a view to avoiding conflicts" at the end of the first sentence of the paragraph signals that "avoiding conflicts" is among one of the principal purposes of the paragraph. It is, however, not the exclusive purpose of the draft guideline. The paragraph is formulated in the passive form, in recognition of the fact that the process of identification, interpretation and application involves not only States but also international organizations, as appropriate.

(3) The phrase "should, to the extent possible, be identified, interpreted and applied in order to give rise to a single set of compatible obligations" draws upon the Commission's Study Group conclusions on fragmentation. The term "identified" is particularly relevant in

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[122] See draft art. 10 (on interrelationship) of resolution 2/2014 on the declaration of legal principles relating to climate change of the International Law Association, *Report of the Seventy-sixth Conference held in Washington D.C., August 2014* (London, 2014), p. 26.

[123] *Yearbook ... 2006*, vol. II (Part Two), para. 251. See conclusion (2) on "relationships of interpretation" and "relationships of conflict". See, for the analytical study, "Fragmentation of international law: difficulties arising from the diversification and expansion of international law", report of the Study Group of the International Law Commission finalized by Martti Koskenniemi (A/CN.4/L.682 and Corr.1 and Add.1).

relation to rules arising from treaty obligations and other sources of international law. In coordinating norms, certain preliminary steps need to be taken that pertain to identification, for example, a determination of whether two norms address "the same subject matter", and which norm should be considered *lex generalis* or *lex specialis* and *lex anterior* or *lex posterior*, and whether the *pacta tertiis* rule applies. Moreover, when resorting to rules of customary international law for the purposes of interpretation, identification of customary international law itself is considered a prerequisite.

(4) The first sentence also makes specific reference to the principles of "harmonization and systemic integration", which were accorded particular attention in the conclusions of the work of the Study Group. As noted in conclusion (4) on harmonization, when several norms bear on a single issue they should, to the extent possible, be interpreted so as give rise to "a single set of compatible obligations". Moreover, under conclusion (17), systemic integration denotes that "whatever their subject matter, treaties are a creation of the international legal system". They should thus be interpreted against the background of other international rules and principles.

(5) The second sentence of paragraph 1 seeks to locate the paragraph within the relevant rules set forth in the Vienna Convention on the Law of Treaties of 1969,[124] including articles 30 and 31, paragraph 3 (c), and the principles and rules of customary international law. Article 31, paragraph 3 (c), is intended to guarantee a "systemic interpretation", requiring "any relevant rules of international law applicable in the relations between the parties" to be taken into account.[125] In other words, article 31, paragraph 3 (c), of the 1969 Vienna Convention emphasizes both the "unity of international law" and "the sense in which rules should not be considered in isolation of general international law".[126] Article 30 of the 1969 Vienna Convention provides rules to resolve a conflict, if the above principle of systemic integration does not work effectively in a given circumstance. Article 30 provides for conflict rules of *lex specialis* (para. 2), of *lex posterior* (para. 3) and of *pacta tertiis* (para. 4).[127] The phrase "principles and rules of customary international law" in the second sentence of paragraph 1 covers such principles and rules of customary international law as are relevant to the identification, interpretation and application of relevant rules.[128]

(6) The reference to "including *inter alia* the rules of international trade and investment law, of the law of the sea and of international human rights law" highlights the practical importance of these three areas in their relation to the protection of the atmosphere. The specified areas have close connection with the rules of international law relating to the protection of the atmosphere in terms of treaty practice, jurisprudence and doctrine.[129] Other fields of law, which might be equally relevant, have not been overlooked and the list of relevant fields of law is not intended to be exhaustive. Furthermore, nothing in draft

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[124] United Nations, *Treaty Series*, vol. 1155, No. 18232, p. 331.

[125] See, e.g., WTO, Appellate Body report, *United States — Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, 6 November 1998, para. 158. See also *Al-Adsani v. the United Kingdom*, Application No. 35763/97, ECHR 2001-XI, para. 55.

[126] P. Sands, "Treaty, custom and the cross-fertilization of international law", *Yale Human Rights and Development Law Journal*, vol. 1 (1998), p. 95, para. 25; C. McLachlan, "The principle of systemic integration and article 31 (3) (c) of the Vienna Convention", *International and Comparative Law Quarterly*, vol. 54 (2005), p. 279; O. Corten and P. Klein (eds.), *The Vienna Conventions on the Law of Treaties: A Commentary*, vol. 1 (Oxford, Oxford University Press, 2011), pp. 828–829.

[127] *Ibid.*, pp. 791–798.

[128] It may be noted that the WTO Understanding on Rules and Procedures Governing the Settlement of Disputes (Marrakesh Agreement establishing the World Trade Organization, United Nations, *Treaty Series*, vol. 1869, No. 31874, p. 3, annex 2, p. 401) provides in art. 3, para. 2, that "[t]he dispute settlement system of the WTO … serves … to clarify the existing provisions of those [covered] agreements in accordance with *customary* rules of interpretation of public international law" (emphasis added).

[129] See International Law Association, *Report of the Seventy-sixth Conference held in Washington* … (footnote 122 above); and A. Boyle, "Relationship between international environmental law and other branches of international law", in *The Oxford Handbook of International Environmental Law*, Bodansky *et al.* (footnote 19 above), pp. 125–146.

guideline 9 should be interpreted as subordinating rules of international law in the listed fields to rules relating to the protection of the atmosphere and vice-versa.

(7) With respect to international trade law, the concept of mutual supportiveness has emerged to help reconcile that law and international environmental law, which relates in part to protection of the atmosphere. The Marrakesh Agreement establishing the World Trade Organization[130] of 1994 provides, in its preamble, that its aim is to reconcile trade and development goals with environmental needs "in accordance with the objective of sustainable development".[131] The WTO Committee on Trade and Environment began pursuing its activities "with the aim of making international trade and environmental policies mutually supportive",[132] and in its 1996 report to the Singapore Ministerial Conference, the Committee reiterated its position that the WTO system and environmental protection are "two areas of policy-making [that] are both important and … should be mutually supportive in order to promote sustainable development".[133] As the concept of "mutual supportiveness" has become gradually regarded as "a legal standard *internal* to the WTO",[134] the 2001 Doha Ministerial Declaration expresses the conviction of States that "acting for the protection of the environment and the promotion of sustainable development can and must be mutually supportive".[135] Mutual supportiveness is considered in international trade law as part of the principle of harmonization in interpreting conflicting rules of different treaties. Among a number of relevant WTO dispute settlement cases, the *United States — Standards for Reformulated and Conventional Gasoline* case in 1996 is most notable in that the Appellate Body refused to separate the rules of the General Agreement on Tariffs and Trade from other rules of interpretation in public international law, by stating that "the *General Agreement* is not to be read *in clinical isolation from public international law*" (emphasis added),[136] strongly supporting the interpretative principle of harmonization and systemic integration.

(8) Similar trends and approaches appear in international investment law. Free trade agreements, which contain a number of investment clauses, such as the North American Free Trade Agreement,[137] and numerous bilateral investment treaties[138] also contain

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[130] United Nations, *Treaty Series*, vols. 1867–1869, No. 31874.

[131] *Ibid.*, vol. 1867, No. 31874, p. 154.

[132] Trade Negotiations Committee, decision of 14 April 1994, MTN.TNC/45(MIN), annex II, p. 17.

[133] WTO, Committee on Trade and Environment, Report (1996), WT/CTE/1 (12 November 1996), para. 167.

[134] J. Pauwelyn, *Conflict of Norms in Public International Law: How WTO Law Relates to Other Rules of International Law* (Cambridge, United Kingdom, Cambridge University Press, 2003); R. Pavoni, "Mutual supportiveness as a principle of interpretation and law-making: a watershed for the 'WTO-and-competing regimes' debate?", *European Journal of International Law*, vol. 21, No. 3 (2010), pp. 651–652. See also S. Murase, "Perspectives from international economic law on transnational environmental issues", *Collected Courses of The Hague Academy of International Law*, vol. 253 (Leiden, Martinus Nijhoff, 1996), pp. 283–431, reproduced in S. Murase, *International Law: An Integrative Perspective on Transboundary Issues* (Tokyo, Sophia University Press, 2011), pp. 1–127; and S. Murase, "Conflict of international regimes: trade and the environment", *ibid.*, pp. 130–166.

[135] Adopted on 14 November 2001 at the fourth session of the WTO Ministerial Conference in Doha, WT/MIN(01)/DEC/1, para. 6. The Hong Kong Ministerial Declaration of 2005 reaffirmed that "the mandate in paragraph 31 of the Doha Ministerial Declaration aimed at enhancing the mutual supportiveness of trade and environment …" (adopted on 18 December 2005 at the sixth session of the Ministerial Conference in Hong Kong, China, WT/MIN(05)/DEC, para. 31).

[136] WTO, Appellate Body report, *Standards for Reformulated and Conventional Gasoline*, WT/DS2/AB/R, 29 April 1996, p. 17. See also S. Murase, "Unilateral measures and the WTO dispute settlement" (discussing the *Gasoline* case), in *Asian Dragons and Green Trade: Environment, Economics and International Law*, S.C. Tay and D.C. Esty (eds.) (Singapore, Times Academic Press, 1996), pp. 137–144.

[137] North American Free Trade Agreement Between the Government of Canada, the Government of the United Mexican States, and the Government of the United States of America (Washington D.C., United States Government Printing Office, 1993). Note, in particular, arts. 104, para. 1, and 1114.

[138] There are various model bilateral investment treaties (BITs), such as: Canada Model BIT of 2004, available at www.italaw.com/documents/Canadian2004-FIPA-model-en.pdf; Colombia Model BIT of 2007, available at www.italaw.com/documents/inv_model_bit_colombia.pdf; United States Model BIT of 2012, available at www.italaw.com/sites/default/files/archive/ita1028.pdf; Model International

standards relating to the environment, which have been confirmed by the jurisprudence of the relevant dispute settlement bodies. Some investment tribunals have emphasized that investment treaties "cannot be read and interpreted in isolation from public international law".[139]

(9) The same is the case with the law of the sea. The protection of the atmosphere is intrinsically linked to the oceans and the law of the sea owing to the close physical interaction between the atmosphere and the oceans. The Paris Agreement notes in its preamble "the importance of ensuring the integrity of all ecosystems, including oceans". This link is also borne out by the United Nations Convention on the Law of the Sea of 1982,[140] which defines the "pollution of the marine environment", in article 1, paragraph 1 (4), in such a way as to include all airborne sources of marine pollution, including atmospheric pollution from land-based sources and vessels.[141] It offers detailed provisions on the protection and preservation of the marine environment through Part XII, in particular articles 192, 194, 207, 211 and 212. There are a number of regional conventions regulating marine pollution from land-based sources.[142] IMO has sought to regulate vessel-source pollution in its efforts to supplement the provisions of the Convention[143] and to combat climate change.[144] The effective implementation of the applicable rules of the law of the sea

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Agreement on Investment for Sustainable Development of the International Institute for Sustainable Development (IISD) of 2005, in H. Mann *et al.*, *IISD Model International Agreement on Investment for Sustainable Development* (2nd ed.) (Winnipeg, 2005), art. 34, available from www.iisd.org/pdf/2005/investment_model_int_agreement.pdf. See also United Nations Conference on Trade and Development, *Investment Policy Framework for Sustainable Development* (2015), pp. 91–121, available at http://unctad.org/en/PublicationsLibrary/diaepcb2015d5_en.pdf; P. Muchlinski, "Negotiating new generation international investment agreements: new sustainable development-oriented initiatives", in *Shifting Paradigms in International Investment Law: More Balanced, Less Isolated, Increasingly Diversified*, S. Hindelang and M. Krajewski (eds.) (Oxford, Oxford University Press, 2016), pp. 41–64.

[139] *Phoenix Action Ltd. v. the Czech Republic*, ICSID Case No. ARB/06/5, award, 15 April 2009, para. 78.

[140] Prior to the Convention, the only international instrument of significance was the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Moscow, 5 August 1963, United Nations, *Treaty Series*, vol. 480, No. 6964, p. 43).

[141] M.H. Nordquist *et al.* (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary*, vol. II (Dordrecht, Martinus Nijhoff, 1991), pp. 41–42.

[142] For example, the Convention for the Protection of the Marine Environment of the North-East Atlantic (United Nations, *Treaty Series*, No. 42279, p. 67, at p. 71, art. 1 (e)); the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki, 9 April 1992, *ibid.*, vol. 1507, No. 25986, p. 166, at p. 169, art. 2, para. 2); the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources (*ibid.*, vol. 1328, No. 22281, p. 105, at p. 121, art. 4, para. 1 (b)); the Protocol for the Protection of the South-East Pacific against Pollution from Land-based Sources (Quito, 22 July 1983, *ibid.*, vol. 1648, No. 28327, p. 73, at p. 90, art. II (c)); and the Protocol for the Protection of the Marine Environment against Pollution from Land-based Sources to the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution (Kuwait, 21 February 1990, *ibid.*, vol. 2399, No. 17898, p. 3, at p. 40, art. III).

[143] For example, at the fifty-eighth session of the Marine Environment Protection Committee in 2008, IMO adopted annex VI, as amended, to the International Convention for the Prevention of Pollution from Ships (*ibid.*, vol. 1340, No. 22484, p. 61), which regulates, *inter alia*, emissions of SO_x and NO_x. The Convention now has six annexes, namely, annex I on regulations for the prevention of pollution by oil (entry into force on 2 October 1983); annex II on regulations for the control of pollution by noxious liquid substances in bulk (entry into force on 6 April 1987); annex III on regulations for the prevention of pollution by harmful substances carried by sea in packaged form (entry into force on 1 July 1992); annex IV on regulations for the prevention of pollution by sewage from ships (entry into force on 27 September 2003); annex V on regulations for the prevention of pollution by garbage from ships (entry into force on 31 December 1988); and annex VI on regulations for the prevention of air pollution from ships (entry into force on 19 May 2005).

[144] S. Karim, *Prevention of Pollution of the Marine Environment from Vessels: The Potential and Limits of the International Maritime Organization* (Dordrecht, Springer, 2015), pp. 107–126; S. Karim and S. Alam, "Climate change and reduction of emissions of greenhouse gases from ships: an appraisal", *Asian Journal of International Law*, vol. 1 (2011), pp. 131–148; Y. Shi, "Are greenhouse gas emissions from international shipping a type of marine pollution?" *Marine Pollution Bulletin*, vol.

could help to protect the atmosphere. Similarly, the effective implementation of the rules on the protection of the environment could protect the oceans.

(10) As for international human rights law, environmental degradation, including air pollution, climate change and ozone layer depletion, "has the potential to affect the realization of human rights".[145] The link between human rights and the environment, including the atmosphere, is acknowledged in the practice. The Stockholm Declaration recognizes, in its principle 1, that everyone "has the fundamental right to freedom, equality and adequate conditions of life in an environment of a quality that permits a life of dignity and well-being".[146] The Rio Declaration of 1992 outlines, in its principle 1, that "[h]uman beings are at the centre of concerns for sustainable development", and that "[t]hey are entitled to a healthy and productive life in harmony with nature".[147] In the context of atmospheric pollution, the Convention on Long-range Transboundary Air Pollution recognizes that air pollution has "deleterious effects of such a nature as to endanger human health" and provides that the parties are determined "to protect man and his environment against air pollution" of a certain magnitude.[148] Likewise, for atmospheric degradation, the Vienna Convention for the Protection of the Ozone Layer contains a provision whereby the parties are required to take appropriate measures "to protect human health" in accordance with the Convention and Protocols to which they are a party.[149] Similarly, the United Nations Framework Convention on Climate Change deals with the adverse effects of climate change, including significant deleterious effects "on human health and welfare".[150]

(11) In this regard, relevant human rights are "the right to life",[151] "the right to private and family life"[152] and "the right to property".[153] Where a specific right to environment exists in human rights conventions, the relevant courts and treaty bodies apply them, including the right to health. In order for international human rights law to contribute to the protection of the atmosphere, however, certain core requirements must be fulfilled.[154] First,

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113 (2016), pp. 187–192; J. Harrison, "Recent developments and continuing challenges in the regulation of greenhouse gas emissions from international shipping" (2012), Edinburgh School of Law Research Paper No. 2012/12, p. 20. Available from https://ssrn.com/abstract=2037038 (accessed 7 July 2017).

145 Analytical study on the relationship between human rights and the environment: report of the United Nations High Commissioner for Human Rights (A/HRC/19/34), para. 15. See also Human Rights Council resolution 19/10 of 19 April 2012 on human rights and the environment.

146 See L.B. Sohn, "The Stockholm Declaration on the Human Environment" (footnote 23 above), at pp. 451–455.

147 F. Francioni, "Principle 1: human beings and the environment", in *The Rio Declaration on Environment and Development: A Commentary*, J.E. Viñuales (ed.) (Oxford, Oxford University Press, 2015), pp. 93–106, at pp. 97–98.

148 United Nations, *Treaty Series*, vol. 1302, No. 21623, p. 217, at p. 219, arts. 1 and 2.

149 *Ibid.*, vol. 1513, No. 26164, p. 293, at p. 326, art. 2.

150 Art. 1.

151 Art. 6 of the International Covenant on Civil and Political Rights of 1966 (New York, 16 December 1966, United Nations, *Treaty Series*, vol. 999, No. 14668, p. 171); art. 6 of the Convention on the Rights of the Child of 1989 (New York, 20 December 1989, *ibid.*, vol. 1577, No. 27531, p. 3); art. 10 of the Convention on the Rights of Persons with Disabilities of 2006 (New York, 20 December 2006, *ibid.*, vol. 2515, No. 44910, p. 3); art. 2 of the Convention for the Protection of Human Rights and Fundamental Freedoms of 1950 (Rome, 4 November 1950, *ibid.*, vol. 213, No. 2889, p. 221, hereinafter, "European Convention on Human Rights"); art. 4 of the American Convention on Human Rights of 1969 (San José, 22 November 1969, *ibid.*, vol. 1144, No. 14668, p. 171); and art. 4 of the African Charter on Human and Peoples' Rights of 1981 (Nairobi, 27 June 1981, *ibid.*, vol. 1520, No. 26363, p. 217).

152 Art. 17 of the International Covenant on Civil and Political Rights; art. 8 of the European Convention on Human Rights; and art. 11, para. 2, of the American Convention on Human Rights.

153 Art. 1 of Protocol No. 1 to the European Convention on Human Rights (*ibid.*, vol. 213, No. 2889, p. 221); art. 21 of the American Convention on Human Rights; and art. 14 of the African Charter on Human and Peoples' Rights. See D. Shelton, "Human rights and the environment: substantive rights" in *Research Handbook on International Environmental Law*, M. Fitzmaurice, D.M. Ong and P. Merkouris (eds.) (Cheltenham, Edward Elgar, 2010), pp. 267–283, at pp. 267, 269–278.

154 P.-M. Dupuy and J.E. Viñuales, *International Environmental Law* (Cambridge, United Kingdom, Cambridge University Press, 2015), pp. 320–329.

as international human rights law remains "a personal-injury-based legal system",[155] a direct link between atmospheric pollution or degradation that impairs the protected right and an impairment of a protected right must be established. Second, the adverse effects of atmospheric pollution or degradation must attain a certain threshold if they are to fall within the scope of international human rights law. The assessment of such minimum standards is relative and depends on the content of the right to be invoked and all the relevant circumstances of the case, such as the intensity and duration of the nuisance and its physical or mental effects. Third, and most importantly, it is necessary to establish the causal link between an action or omission of a State, on the one hand, and atmospheric pollution or degradation, on the other hand.

(12) One of the difficulties in the interrelationship between the rules of international law relating to the atmosphere and human rights law is the "disconnect" in their application. While the rules of international law relating to the atmosphere apply not only to the States of victims but also to the States of origin of the harm, the scope of application of human rights treaties is limited to the persons subject to a State's jurisdiction.[156] Thus, where an environmentally harmful activity in one State affects persons in another State, the question of the interpretation of "jurisdiction" in the context of human rights obligations arises. In interpreting and applying the notion, regard may be had to the object and purpose of human rights treaties. In its advisory opinion on the *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, the International Court of Justice pronounced, when addressing the issue of extraterritorial jurisdiction, "while the jurisdiction of States is primarily territorial, it may sometimes be exercised outside the national territory. Considering the object and purpose of the International Covenant on Civil and Political Rights, it would seem natural that, even when such is the case, State parties to the Covenant should be bound to comply with its provisions".[157]

(13) One possible consideration is the relevance of the principle of non-discrimination. Some authors maintain that it may be considered unreasonable that international human rights law would have no application to atmospheric pollution or global degradation and that the law can extend protection only to the victims of intra-boundary pollution. They maintain that the non-discrimination principle requires the responsible State to treat transboundary atmospheric pollution or global atmospheric degradation no differently from domestic pollution.[158] Furthermore, if and insofar as the relevant human rights norms are today recognized as either established or emergent rules of customary international law,[159] they may be considered as overlapping with environmental norms for the protection of the atmosphere, such as due diligence (draft guideline 3), environmental impact assessment (draft guideline 4), sustainable utilization (draft guideline 5), equitable and reasonable utilization (draft guideline 6) and international cooperation (draft guideline 8), among others, which would enable interpretation and application of both norms in a harmonious manner.

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[155] *Ibid.*, pp. 308–309.

[156] Art. 2 of the International Covenant on Civil and Political Rights; art. 1 of the European Convention on Human Rights; and art. 1 of the American Convention on Human Rights. See A. Boyle, "Human rights and the environment: where next?", *European Journal of International Law*, vol. 23 (2012), pp. 613–642, at pp. 633–641.

[157] *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, I.C.J. Reports 2004*, p. 136, at p. 179, para. 109.

[158] Boyle, "Human rights and the environment" (see footnote 156 above), pp. 639–640.

[159] B. Simma and P. Alston, "Sources of human rights law: custom, *jus cogens* and general principles", *Australian Year Book of International Law*, vol. 12 (1988), pp. 82–108; V. Dimitrijevic, "Customary law as an instrument for the protection of human rights", Working Paper, No. 7 (Milan, Istituto Per Gli Studi Di Politica Internazionale (ISPI), 2006), pp. 3–30; B. Simma, "Human rights in the International Court of Justice: are we witnessing a sea change?", in *Unity and Diversity of International Law: Essays in Honour of Professor Pierre-Marie Dupuy*, D. Alland *et al.* (eds.) (Leiden, Martinus Nijhoff, 2014), pp. 711–737; and H. Thirlway, "International law and practice: human rights in customary law: an attempt to define some of the issues," *Leiden Journal of International Law*, vol. 28 (2015), pp. 495–506.

(14) In contrast to paragraph 1, which addresses identification, interpretation and application, paragraph 2 deals with the situation in which States wish to develop new rules. The paragraph signals a general desire to encourage States, when engaged in negotiations involving the creation of new rules, to take into account the systemic relationships that exist between rules of international law relating to the atmosphere and rules in other legal fields.

(15) Paragraph 3 highlights the plight of those in vulnerable situations because of atmospheric pollution and atmospheric degradation. It has been formulated to make a direct reference to atmospheric pollution and atmospheric degradation. The reference to paragraphs 1 and 2 captures both the aspects of "identification, interpretation and application", on the one hand, and "development", on the other hand. The phrase "special consideration should be given to persons and groups particularly vulnerable to atmospheric pollution and atmospheric degradation" underlines the broad scope of the consideration to be given to the situation of vulnerable groups, covering both aspects of the present topic, namely "atmospheric pollution" and "atmospheric degradation". It was not considered useful to refer in the text to "human rights", or even to "rights" or "legally protected interest".

(16) The second sentence of paragraph 3 gives examples of groups that may be found in vulnerable situations in the context of atmospheric pollution and atmospheric degradation. The World Health Organization has noted that: "All populations will be affected by a changing climate, but the initial health risks vary greatly, depending on where and how people live. People living in small island developing States and other coastal regions, megacities, and mountainous and polar regions are all particularly vulnerable in different ways."[160] In the Sustainable Development Goals adopted by the General Assembly in its 2030 Agenda for Sustainable Development, atmospheric pollution is addressed in Goals 3.9 and 11.6, which call, in particular, for a substantial reduction in the number of deaths and illnesses from air pollution, and for special attention to ambient air quality in cities.[161]

(17) The phrase in the second sentence of paragraph 3 "may include, *inter alia*" denotes that the given examples are not necessarily exhaustive. Indigenous peoples are, as was declared in the Report of the Indigenous Peoples' Global Summit on Climate Change, "the most vulnerable to the impacts of climate change because they live in the areas most affected by climate change and are usually the most socio-economically disadvantaged".[162] People of the least developed countries are also placed in a particularly vulnerable situation as they often live in extreme poverty, without access to basic infrastructure services and to adequate medical and social protection.[163] People of low-lying areas and small-island developing States affected by sea-level rise are subject to the potential loss of land, leading to displacement and, in some cases, forced migration. Inspired by the preamble of the Paris Agreement, in addition to the groups specifically indicated in paragraph 3 of draft guideline 9, other groups of potentially particularly vulnerable people include local communities,

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[160] World Health Organization, *Protecting Health from Climate Change: Connecting Science, Policy and People* (Geneva, 2009), p. 2.

[161] See B. Lode, P. Schönberger and P. Toussaint, "Clean air for all by 2030? Air quality in the 2030 Agenda and in international law", *Review of European, Comparative and International Environmental Law*, vol. 25 (2016), pp. 27–38. See also the indicators for these targets specified in 2016 (3.9.1: mortality rate attributed to household and ambient air pollution; and 11.6.2: annual mean levels of fine particulate matter in cities).

[162] "Report of the Indigenous Peoples' Global Summit on Climate Change, 20–24 April 2009, Anchorage, Alaska", p. 12, available from www.un.org/ga/president/63/letters/globalsummitoncc.pdf#search=%27 (accessed 7 July 2017). See R.L. Barsh, "Indigenous peoples", in *The Oxford Handbook of International Environmental Law*, Bodansky *et al.* (footnote 19 above), pp. 829–852; B. Kingsbury, "Indigenous peoples", in *The Max Planck Encyclopedia of Public International Law*, R. Wolfrum, (ed.) (Oxford, Oxford University Press, 2012), vol. V, pp. 116–133; and H.A. Strydom, "Environment and indigenous peoples", in (ed.), *The Max Planck Encyclopedia of Public International Law*, R. Wolfrum (ed.) (Oxford, Oxford University Press, 2012), vol. III, pp. 455–461.

[163] World Bank Group Climate Change Action Plan, 7 April 2016, para. 104, available from http://pubdocs.worldbank.org/en/677331460056382875/WBG-Climate-Change-Action-Plan-public-version.pdf (accessed 7 July 2017).

migrants, women, children, persons with disabilities and also the elderly, who are often seriously affected by atmospheric pollution and atmospheric degradation.[164]

Guideline 10
Implementation

1. National implementation of obligations under international law relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation, including those referred to in the present draft guidelines, may take the form of legislative, administrative, judicial and other actions.

2. States should endeavour to give effect to the recommendations contained in the present draft guidelines.

Commentary

(1) Draft guideline 10 deals with implementation of obligations under international law relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation. The use of the term "implementation" is not necessarily uniform in agreements, or in literature. The term "implementation" is used in the present draft guideline to refer to measures that States may take to make treaty provisions effective at the national level, including implementation in their national laws.[165]

(2) Draft guideline 10 consists of two paragraphs, which address, on one hand, existing obligations under international law, and on the other hand, recommendations contained in the draft guidelines.

(3) The draft guidelines refer to certain obligations of States under international law relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation, namely, the obligation to protect the atmosphere (draft guideline 3), the obligation to ensure that an environmental impact assessment is carried out (draft guideline 4) and the obligation to cooperate (draft guideline 8).[166] Given that States have these obligations, it is a logical and intrinsic consequence that they should faithfully be implemented.

(4) The term "[n]ational implementation" denotes the measures that parties may take to make international agreements operative at their national level.[167] All these forms of implementation are regulated by the national constitution and legal system of each State. The text of paragraph 1 reflects the idea that States may implement their obligations

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[164] The Committee on the Elimination of Discrimination against Women has an agenda on "gender-related dimensions of disaster risk reduction and climate change"; see http://www.ohchr.org/EN/HRBodies/CEDAW/Pages/ClimateChange.aspx (accessed 7 July 2017). Along with women and children, the elderly and persons with disabilities are usually mentioned as vulnerable people. See World Health Organization, *Protecting Health from Climate Change* ... (footnote 160 above) and the World Bank Group Climate Change Action Plan (footnote 163 above). The Inter-American Convention on Protecting the Human Rights of Older Persons of 2015 (*General Assembly of the Organization of American States, Forty-fifth Regular Session, Proceedings*, vol. I (OEA/Ser.P/XLV-O.2), pp. 11–38) provides, in article 25 (right to a healthy environment), that: "Older persons have the right to live in a healthy environment with access to basic public services. To that end, States Parties shall adopt appropriate measures to safeguard and promote the exercise of this right, inter alia: a. To foster the development of older persons to their full potential in harmony with nature; b. To ensure access for older persons, on an equal with others, to basic public drinking water and sanitation services, among others."

[165] See generally, P. Sands and J. Peel, *Principles of International Environmental Law*, 3rd ed. (Cambridge: Cambridge University Press, 2012), pp. 135–183; E. Brown Weiss and H.K. Jacobson (eds.), *Engaging Countries: Strengthening Compliance with International Environmental Accords*, (Cambridge, Massachusetts: MIT Press, 1998), see "A framework for analysis", pp. 1–18, at p. 4.

[166] Even the obligation to cooperate sometimes requires national implementation. According to draft guideline 8, paragraph 2, "[c]ooperation could include exchange of information and joint monitoring", which normally require national implementing legislation.

[167] C. Redgwell, "National implementation", in *The Oxford Handbook of International Environmental Law*, Bodansky *et al.* (footnote 19 above), p. 925.

without being limited to implementation in their national law as such. "National implementation" takes various forms in which obligations under international law may be implemented. This would also apply to situations in which obligations of regional organizations such as the European Union may be implicated.[168]

(5) The use of the term "obligations" in paragraph 1 has to be understood as clearly not intended to impose new obligations on States or create new obligations for them, but rather refers to existing obligations that States already have under international law. Thus, the phrase "including those [obligations] referred to in the present draft guidelines" was chosen, and the expression "referred to" highlights the fact that the draft guidelines do not create new obligations and are not comprehensive of the various issues related to the topic.

(6) National implementation may take many forms, and the word "may" was added to reflect the elective nature of the provision. If national implementation is indeed required, it "may" take different forms, including in "the form of legislative, administrative, judicial and other actions". The reference to "administrative" actions was used rather than "executive" actions, as it was considered that "administrative" was more encompassing in that it also covered possible implementation at lower levels of governmental administration. In any event, the term "other actions" at the end of the sentence would be a residual category covering all other forms of national implementation.

(7) The reference to "the recommendations contained in the present draft guidelines" in paragraph 2 is intended to distinguish such recommendations from "obligations" as referred to in paragraph 1. The expression "recommendations", although not entirely felicitous, was considered appropriate as it would be consistent with the draft guidelines, which use the term "should" in their formulation,[169] and would not dilute any normative content of any of the draft guidelines. Paragraph 2 requires that States should endeavour to give effect to the recommendations contained in the draft guidelines.

(8) The Commission decided not to include a draft guideline on the subject of the responsibility of States for internationally wrongful acts as originally proposed by the Special Rapporteur.[170] In the main, it was considered that the secondary rules of responsibility was a subject that the Commission had already had an occasion to elaborate upon, adopting in 2001 the articles on responsibility of States for internationally wrongful acts.[171] Accordingly, those rules would apply, *mutatis mutandis*, in relation to environmental matters, including protection of the atmosphere from atmospheric pollution and atmospheric degradation. Even though the Special Rapporteur noted that some States had indicated the issue of responsibility should be addressed squarely, and further that the element of "harm" (damage and risk) to be proven by "clear and convincing evidence"[172] would be relevant for determining the questions, for instance, of standing and reparations, a matter determined by primary rules,[173] the Commission has taken the view that a paragraph on the subject, even if it were framed as a without prejudice clause, would unbalance the text of the draft guidelines.

(9) Moreover, even though States sometimes resort to extraterritorial application of national law to the extent permissible where there is a well-founded grounding in

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[168] See, L. Krämer, "Regional economic integration organizations: the European Union as an example", in *The Oxford Handbook of International Environmental Law*, Bodansky *et al.* (footnote 19 above), pp. 853–876 (on implementation, pp. 868–870).

[169] See, for example, draft guidelines 5, 6, 7, 9, and 12, para. 2.

[170] The proposal by the Special Rapporteur read as follows: "Failure to implement the obligations amounting to breach thereof entails the responsibility of States under international law, if the actions or omissions are attributable to the States and the damage or risk is proven by clear and convincing evidence." See the fifth report of the Special Rapporteur (A/CN.4/711), para. 31.

[171] For the articles adopted by the Commission and the commentaries thereto, see *Yearbook ... 2001*, vol. II (Part Two) and corrigendum, paras. 76–77.

[172] See *Trail Smelter* arbitration (footnote 71 above), at p. 1965.

[173] P. Okowa, "Responsibility for environmental damage", in *Research Handbook on International Environmental Law*, Fitzmaurice, Ong and Merkouris (eds.) (footnote 153 above), pp. 303–319, at p. 312; see also Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (Oxford, Oxford University Press, 2000), pp. 171–202.

international law,[174] the Commission did not consider it necessary to address the matter for the purposes of the present draft guidelines, as originally proposed by the Special Rapporteur.[175] The Commission considered that the matter of extraterritorial application of national law by a State raised a host of complex questions with far-reaching implications for other States and for their relations with each other.[176]

Guideline 11
Compliance

1. States are required to abide with their obligations under international law relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation in good faith, including through compliance with the rules and procedures in the relevant agreements to which they are parties.

2. To achieve compliance, facilitative or enforcement procedures may be used, as appropriate, in accordance with the relevant agreements:

(a) facilitative procedures may include providing assistance to States, in cases of non-compliance, in a transparent, non-adversarial and non-punitive manner to ensure that the States concerned comply with their obligations under international law, taking into account their capabilities and special conditions;

(b) enforcement procedures may include issuing a caution of non-compliance, termination of rights and privileges under the relevant agreements, and other forms of enforcement measures.

Commentary

(1) Draft guideline 11, which complements draft guideline 10 on national implementation, refers to compliance at the level of international law. The use of the term "compliance" is not necessarily uniform in agreements, or in literature. The term "compliance" is used in the present draft guideline to refer to mechanisms or procedures *at the level of international law* that verify whether States in fact adhere to the provisions of an agreement. Paragraph 1 is intended to reinforce the principle *pacta sunt servanda*. Thus, it stipulates that "States are required to abide with obligations under international law" in good faith, while further specifying a linkage to obligations under international law concerning the "protection of the atmosphere from atmospheric pollution and atmospheric degradation". The purpose of the formulation "obligations under international law"

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[174] The relevant precedents of extraterritorial application of national law include: (a) the *Trail Smelter* arbitration (article IV of the 1935 Convention for the settlement of difficulties arising from operation of smelter at Trail required to apply "the law and practice followed in dealing with cognate questions in the United States of America…", UNRIAA (see footnote 71 above), pp. 1905–1982 (Award of 1941), at p. 1965); (b) *Tuna-Dolphin* cases under the General Agreement on Tariffs and Trade (The "extra-jurisdictional application" of the United States Marine Mammal Protection Act not being consistent with article XX of the General Agreement, Panel report, *United States — Restrictions on Imports of Tuna*, DS21/R-39S/155, 3 September 1991 (Tuna-Dolphin-I, not adopted), paras. 5.27–5.29; General Agreement on Tariffs and Trade, Panel report, *United States – Restrictions on Imports of Tuna*, DS29/R, 16 June 1994 (Tuna-Dolphin II, not adopted), para. 5.32.); (c) WTO *Gasoline* case (On the extraterritorial application of the United States Clean Air Act, WTO, Appellate Body report, *United States – Standards of Reformulated and Conventional Gasoline*, WT/DS2/AB/R, 22 April 1996; (d) European Court of Justice judgment, *Air Transport Association of America and Others* v. *Secretary of State for Energy and Climate*, 21 December 2011 (On the extraterritorial application of the European Union Aviation Directive 2008/101/EC); (e Singapore Transboundary Haze Pollution Act of 2014, providing for extraterritorial jurisdiction based on the "objective territorial principle" (Parliament of Singapore, *Official Reports*, No. 12, Session 2, 4 August 2014, paras. 5–6).

[175] The proposal by the Special Rapporteur read as follows: "The extraterritorial application of national law by a State is permissible when there is a well-founded grounding in international law. It should be exercised with care, taking into account comity among the States concerned. The extraterritorial enforcement of national law by a State should not be exercised in any circumstance." See the Special Rapporteur's fifth report (A/CN.4/711), para. 31.

[176] See Murase, "Perspectives from international economic law on transnational environmental issues" (footnote 134 above), at pp. 349–372.

regarding the protection of the atmosphere is to harmonize the form used, in paragraph 1, with the language used throughout the draft guidelines. The broad nature of the formulation "obligations under international law" was considered to also better account for the reality that treaty rules constituting obligations may, in some cases, be binding only on the parties to the relevant agreements, while others may reflect or later crystallize into customary international law with consequent legal effects for non-parties. The phrase "relevant agreements" to which the States are parties has been used to avoid narrowing the scope of the provision only to multilateral environmental agreements, when such obligations can exist in other agreements.[177] The general character of paragraph 1 also appropriately serves as an introduction to paragraph 2.

(2) Paragraph 2 deals with the facilitative or enforcement procedures that may be used by compliance mechanisms.[178] The opening phrase of the chapeau "[t]o achieve compliance" provides a purposive positive approach, with its wording aligned with formulations in existing agreements addressing compliance mechanisms. The phrase "may be used, as appropriate" emphasizes the differing circumstances and contexts in which facilitative or enforcement procedures could be deployed to help foster compliance. The disjunctive word "or" indicates that facilitative or enforcement procedures are to be considered as alternatives by the competent organ established under the agreement concerned. The phrase "in accordance with the relevant agreements" is used at the end of the chapeau, so as to emphasize that facilitative or enforcement procedures are those provided for under existing agreements to which States are parties, and that these procedures will operate in accordance with such existing agreements.

(3) Besides the chapeau, paragraph 2 comprises two subparagraphs, (a) and (b). In both subparagraphs, the word "may" has been used before "include" to provide States and the competent organ established under the agreement concerned with flexibility to use existing facilitative or enforcement procedures.

(4) Subparagraph (a) employs the expression "in cases of non-compliance"[179] and refers to "the States concerned", avoiding the expression "non-complying States". Facilitative procedures may include providing "assistance" to States, since those States are willing to comply but unable to do so for lack of capacity. Thus, facilitative measures are provided in a transparent, non-adversarial and non-punitive manner to ensure that the States concerned

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[177] This reflection of State practice would include multilateral or regional or other trade agreements, for example, that may also contemplate environmental protection provisions including exceptions such as those under article XX of the General Agreement on Tariffs and Trade or even so-called environmental "side agreements", such as the North American Agreement on Environmental Cooperation.

[178] Non-compliance procedures have been widely adopted in multilateral environmental agreements relating to the protection of the atmosphere, including the following: (a) Convention on Long-range Transboundary Air Pollution and its subsequent Protocols (United Nations, *Treaty Series*, vol. 1302, No. 21623, p. 217): see E. Milano, "Procedures and mechanisms for review of compliance under the 1979 Long-Range Transboundary Air Pollution Convention and its Protocols", in *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements*, T. Treves *et al.* (eds.) (The Hague, T.M.C. Asser Press, 2009), pp. 169–180; (b) the Montreal Protocol on the Substances that Deplete the Ozone Layer (United Nations, *Treaty Series*, vol. 1522, No. 26369, p. 3, and UNEP/OzL.Pro.4/15); F. Lesniewska, "Filling the holes: the Montreal Protocol's non-compliance mechanisms", in *Research Handbook on International Environmental Law*, Fitzmaurice, Ong and Merkouris (eds.) (footnote 153 above), pp. 471–489; (c) Convention on Environmental Impact Assessment in a Transboundary Context; (d) Kyoto Protocol to the United Nations Framework Convention on Climate Change, and decision 24/CP.7 (FCCC/CP/2001/13/Add.3); J. Brunnée, "Climate change and compliance and enforcement processes", in R. Rayfuse and S.V. Scott (eds.), *International Law in the Era of Climate Change* (Cheltenham: Edward Elgar, 2012), pp. 290–320; (e) the Paris Agreement under the United Nations Framework Convention on Climate Change (FCCC/CP/2015/10/Add.1, annex); D. Bodansky, "The Paris Climate Change Agreement: a new hope?", *American Journal of International Law*, vol. 110 (2016), pp. 288–319).

[179] This is based on the Montreal Protocol on Substances that Deplete the Ozone Layer, which in art. 8 uses the phrase "Parties found to be in non-compliance" (United Nations, *Treaty Series*, vol. 1522, No. 26369, p. 40).

are assisted to comply with their obligations under international law.[180] The last part of that sentence, which references "taking into account their capabilities and special conditions", was considered necessary, in recognition of the specific challenges that developing and least developed countries often face in the discharge of obligations relating to environmental protection. This is due to, most notably, general lack of capacity, which can sometimes be mitigated through receipt of external support enabling capacity-building to facilitate compliance with their obligations under international law.

(5) Subparagraph (b) provides for enforcement procedures, which may include issuing a caution of non-compliance, termination of rights and privileges under the relevant agreements, and other forms of enforcement measures.[181] Enforcement procedures, in contrast to facilitative procedures, aim to achieve compliance by imposing a penalty on the State concerned in case of non-compliance. At the end of the sentence, the term "enforcement measures" was employed rather than the term "sanctions" in order to avoid any confusion with the possibly negative connotation associated with the term "sanctions". The enforcement procedures referred to in subparagraph (b) should be distinguished from any invocation of international responsibility of States, hence these procedures should be adopted only for the purpose of leading the States concerned to return to compliance in accordance with the relevant agreements as referred to in the chapeau.[182]

Guideline 12
Dispute settlement

1. Disputes between States relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation are to be settled by peaceful means.

2. Given that such disputes may be of a fact-intensive and science-dependent character, due consideration should be given to the use of technical and scientific experts.

Commentary

(1) Draft guideline 12 concerns dispute settlement. Paragraph 1 describes the general obligation of States to settle their disputes by peaceful means. The expression "between States" clarifies that the disputes being referred to in the paragraph are inter-State in nature. The paragraph omits the often quoted reference to Article 33, paragraph 1, of the Charter of the United Nations, but the intent is not to downplay the significance of the various pacific means of settlement mentioned in that provision, such as negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to other peaceful means that may be

[180] M. Koskenniemi, "Breach of treaty or non-compliance? Reflections on the enforcement of the Montreal Protocol", *Yearbook of International Environmental Law*, vol. 3 (1992), pp. 123–162; D.G. Victor, "The operation and effectiveness of the Montreal Protocol's non-compliance procedure", in Victor, K. Raustiala and E.B. Skolnikoff (eds.), *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice* (Cambridge, Massachusetts, MIT Press, 1998), pp. 137–176; O. Yoshida, *The International Legal Régime for the Protection of the Stratospheric Ozone Layer* (The Hague, Kluwer Law International, 2001), pp. 178–179; Dupuy and Viñuales, *International Environmental Law* (footnote 154 above), p. 285 *et seq.*

[181] G. Ulfstein and J. Werksman, "The Kyoto compliance system: towards hard enforcement", in O. Schram Stokke, J. Hovi and G. Ulfstein (eds.), *Implementing the Climate Change Regime: International Compliance* (London, Earthscan, 2005), pp. 39–62; S. Urbinati, "Procedures and mechanisms relating to compliance under the 1997 Kyoto Protocol to the 1992 United Nations Framework Convention on Climate Change", in *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements*, Treves *et al.* (footnote 178 above), pp. 63–84; S. Murase, "International lawmaking for the future framework on climate change: a WTO/GATT Model", in *International Law: An Integrative Perspective on Transboundary Issues*, Murase (footnote 134 above), pp. 173–174.

[182] G. Loibl, "Compliance procedures and mechanisms", in *Research Handbook on International Environmental Law*, Fitzmaurice, Ong and Merkouris (eds.) (see footnote 153 above), pp. 426–449, at pp. 437–439.

preferred by the States concerned, nor the principle of choice of means.[183] Paragraph 1 is not to be construed in any way as interfering with or displacing existing dispute settlement provisions in treaty regimes, which will continue to operate in their own terms. The main purpose of the present paragraph is to reaffirm the principle of peaceful settlement of disputes[184] and to serve as a primer for paragraph 2.

(2) The first part of the sentence of paragraph 2 recognizes that disputes relating to the protection of the atmosphere from atmospheric pollution and atmospheric degradation would be "fact-intensive" and "science-dependent". As scientific input has been emphasized in the process of progressive development of international law relating to the protection of the atmosphere,[185] likewise, more complicated scientific and technical issues have raised in the process of international dispute settlement in recent years. Thus, the cases brought before international courts and tribunals have been increasingly focused on highly technical and scientific evidence.[186] Thus, those elements, evident from the experience with inter-State environment disputes, would typically require specialized expertise to contextualize or fully grasp the issues in dispute.

(3) There has been a noticeable change in the attitude of States and the International Court of Justice in recent cases involving the science-dependent issues of international environmental law, which certainly reflect, directly or indirectly, specific features of the settlement of disputes relating to the protection of the atmosphere.[187] For this reason, it would be necessary that, as underlined in paragraph 2 "due consideration" be given to the

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[183] C. Tomuschat, "Article 33", in *The Charter of the United Nations: A Commentary*, 2nd ed., vol. 1, B. Simma, (ed.) (Munich, Verlag C.H. Beck, 2002), pp. 583–594.

[184] N. Klein, "Settlement of international environmental law disputes", in *Research Handbook of International Environmental Law*, Fitzmaurice, Ong and Merkouris (eds.) (footnote 153 above), pp. 379–400; C.P.R. Romano, "International dispute settlement", in *The Oxford Handbook of International Environmental Law*, Bodansky *et al.* (footnote 19 above), at pp. 1039–1042.

[185] See S. Murase, "Scientific knowledge and the progressive development of international law: with reference to the ILC topic on the protection of the atmosphere", in *The International Legal Order: Current Needs and Possible Responses: Essays in Honour of Djamchid Momtaz*, J. Crawford *et al.* (eds.) (Leiden, Brill Nijhoff, 2017), pp. 41–52.

[186] See the speech of the President of the International Court of Justice, Ronny Abraham, before the Sixth Committee on 28 October 2016 (on international environmental law cases before the International Court of Justice) (available at www.icj-cij.org/files/press-releases/0/19280.pdf); and President Peter Tomka, "The ICJ in the service of peace and justice – words of welcome by President Tomka", 27 September 2013 (available at www.icj-cij.org/files/press-releases/8/17538.pdf). See also E. Valencia-Ospina, "Evidence before the International Court of Justice", *International Law Forum du droit international*, vol. 1 (1999), pp. 202–207; A. Riddell, "Scientific evidence in the International Court of Justice — problems and possibilities", *Finnish Yearbook of International Law*, vol. 20 (2009), pp. 229–258; B. Simma, "The International Court of Justice and scientific expertise", *American Society of International Law Proceedings*, vol. 106 (2012), pp. 230–233; A. Riddell and B. Plant, *Evidence Before the International Court of Justice* (London, British Institute of International and Comparative Law, 2009), chap. 9.

[187] In the 1997 *Gabčíkovo-Nagymaros* (see footnote 76 above) and the 2010 *Pulp Mills* (see footnote 73 above) cases, the parties followed the traditional method of presenting the evidence, that is, by expert-counsel, though they were scientists and not lawyers. Their scientific findings were treated as the parties' assertions, but this met some criticisms by the Bench, as well as by commentators. Thus, in the *Aerial Herbicide Spraying* (withdrawn in 2013) (*Aerial Herbicide Spraying (Ecuador v. Colombia), Order of 13 September 2013, I.C.J. Reports 2013*, p. 278), the 2014 *Whaling in the Antarctica* (*Whaling in the Antarctica (Australia v. Japan; New Zealand intervening), Judgment, I.C.J. Reports 2014*, p. 226) and the 2015 *Construction of a Road* (see footnote 82 above) cases, the parties appointed independent experts, who were, in the latter two cases, cross-examined and were treated with more weight than the statements of expert-counsel. In all of these cases, the Court did not appoint its own experts in accordance with Article 50 of its Statute, but it did so finally in the *Maritime Delimitation* case, although the latter was not *per se* an environmental law dispute (*Maritime Delimitation in the Caribbean Sea and the Pacific Ocean (Costa Rica v. Nicaragua)*, Judgment (Merits), 2 February 2018, available at www.icj-cij.org/files/case-related/157/157-20180202-JUD-01-00-EN.pdf).

use of technical and scientific experts.[188] The essential aspect in this paragraph is to emphasize the use of technical and scientific experts in the settlement of inter-State disputes whether by judicial or other means.[189]

(4) In the context of judicial or arbitral process of settling disputes relating to the protection of the atmosphere, the principles of *jura novit curia* (the court knows the law) and *non ultra petita* (not beyond the parties' request) may become relevant, since the relationship between law and fact is a pertinent issue relating to scientific evidence.[190] The Commission however decided to maintain a simple formulation, and not to address these issues in the draft guideline, as originally proposed by the Special Rapporteur.[191]

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[188] See, D. Peat, "The use of court-appointed experts by the International Court of Justice", *British Yearbook of International Law*, vol. 84 (2014), pp. 271–303; J.G. Devaney, *Fact-finding before the International Court of Justice* (Cambridge, Cambridge University Press, 2016); C.E. Foster, *Science and the Precautionary Principle in International Courts and Tribunals: Expert Evidence, Burden of Proof and Finality* (Cambridge, Cambridge University Press, 2011), pp. 77–135; Special edition on courts and tribunals and the treatment of scientific issues, *Journal of International Dispute Settlement*, vol. 3 (2012); C. Tams, "Article 50" and "Article 51", in *The Statute of the International Court of Justice: A Commentary*, A. Zimmermann *et al.* (eds.) (Oxford, Oxford University Press, 2012), pp. 1287–1311; C.E. Foster, "New clothes for the emperor? Consultation of experts by the International Court of Justice", *Journal of International Dispute Settlement*, vol. 5 (2014), pp. 139–173; J.E. Viñuales, "Legal techniques for dealing with scientific uncertainty in environmental law", *Vanderbilt Journal of Transnational Law*, vol. 43 (2010), pp. 437–504, at pp. 476–480; G. Gaja, "Assessing expert evidence in the ICJ", *The Law and Practice of International Courts and Tribunals*, vol. 15 (2016), pp. 409–418.

[189] It should be recalled that there are close interactions between non-judicial and judicial means of settling disputes. In the context of disputes relating to the environment and to the protection of the atmosphere, in particular, even at the stage of initial negotiations, States are often required to be well equipped with scientific evidence on which their claims are based, and accordingly the distance between negotiation and judicial settlement may not be very distant.

[190] The line between "fact" and "law" is often obscured (M. Kazazi, *Burden of Proof and Related Issues: A Study on Evidence before International Tribunals* (The Hague, Kluwer Law International, 1996), pp. 42–49). Scientific issues are described by commentators as "mixed questions of fact and law" (e.g., C.F. Amerasinghe, *Evidence in International Litigation*, (Leiden, Martinus Nijhoff Publishers, 2005), p. 58), which cannot be easily categorized into either a matter of law or fact. Judge A. Yusuf stated in his declaration in the *Pulp Mills* case that the experts' role was to elucidate facts and to clarify the scientific validity of the methods used to establish facts or to collect data; whereas it is for the Court to weigh the probative value of the facts (*Pulp Mills* (see footnote 73 above), Declaration of Judge Yusuf, para. 10). See also Foster, *Science and the Precautionary Principle in International Courts and Tribunals: Expert Evidence, Burden of Proof and Finality* (see footnote 188 above), pp. 145–147). Based on *jura novit curia*, the Court can in principle apply any law to any fact, and in theory can evaluate evidence and draw conclusions as it sees appropriate (as long as the Court complies with the *non ultra petita* rule); these are all legal matters. Given its judicial function and under *jura novit curia*, the Court needs to sufficiently understand the meaning of each related technical fact in the case at hand.

[191] The proposal by the Special Rapporteur read as follows: "It may be taken into consideration, as appropriate, in the judicial settlement of disputes relating to the protection of the atmosphere, that the principle of *jura novit curia* (the court knows the law) applies not only to law but also to facts, thereby requiring necessary assessment of scientific evidence, on the condition of not exceeding the scope of the dispute under the rule of *non ultra petita* (not beyond the request)." See the Special Rapporteur's fifth report (A/CN.4/711), para. 104.